The PHOTOFACT® Servicer

SET 542 ★ *Published for all users of Howard W. Sams' Photofact Folders* ★ AUG. 1961

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KS21CU, TS17DS,
DU, TS21CU, TW17D
(CH. T17-4, -5, -8)

Bendix Models
935A, B, C, D

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Coils	
L1	259138-1
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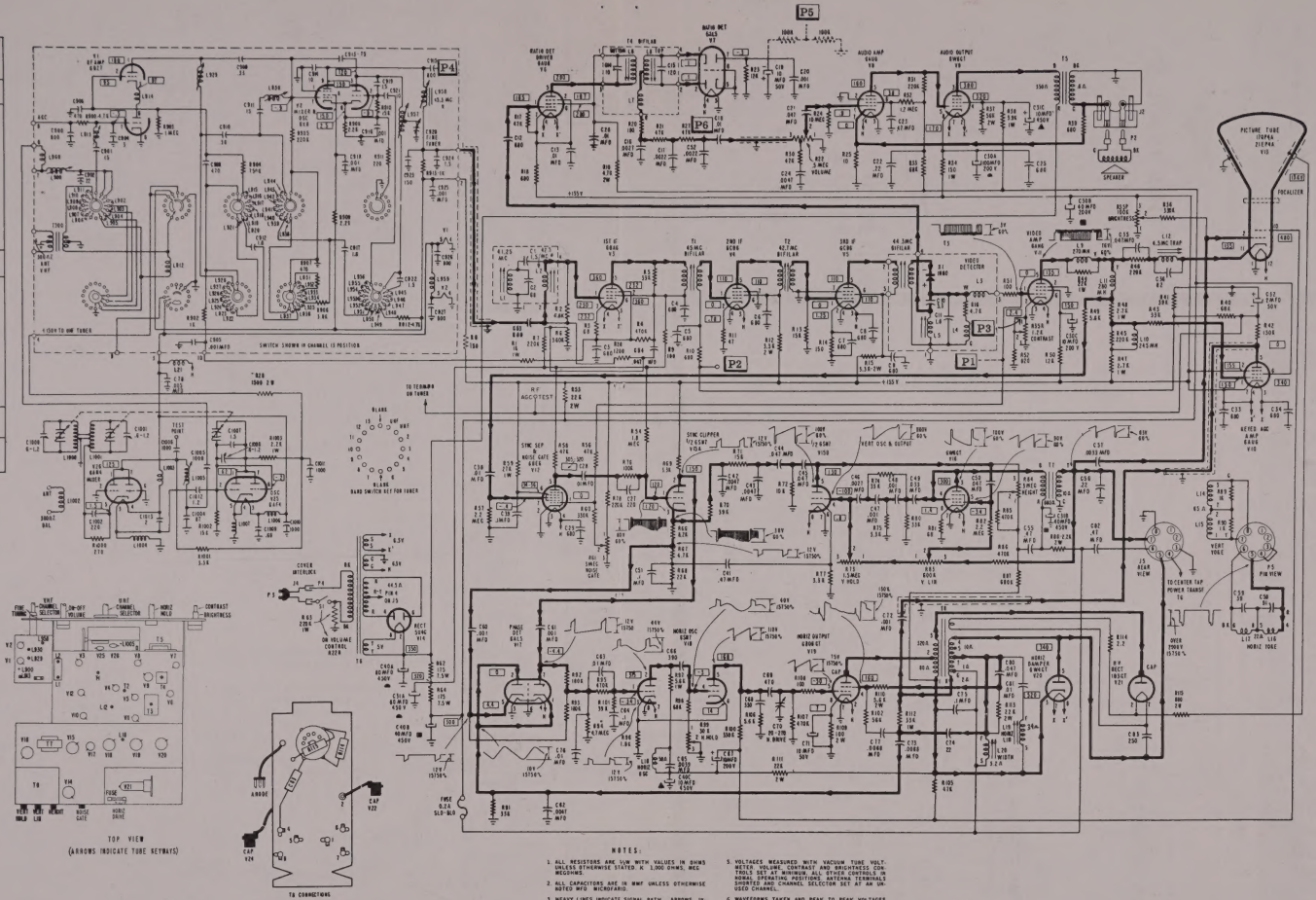
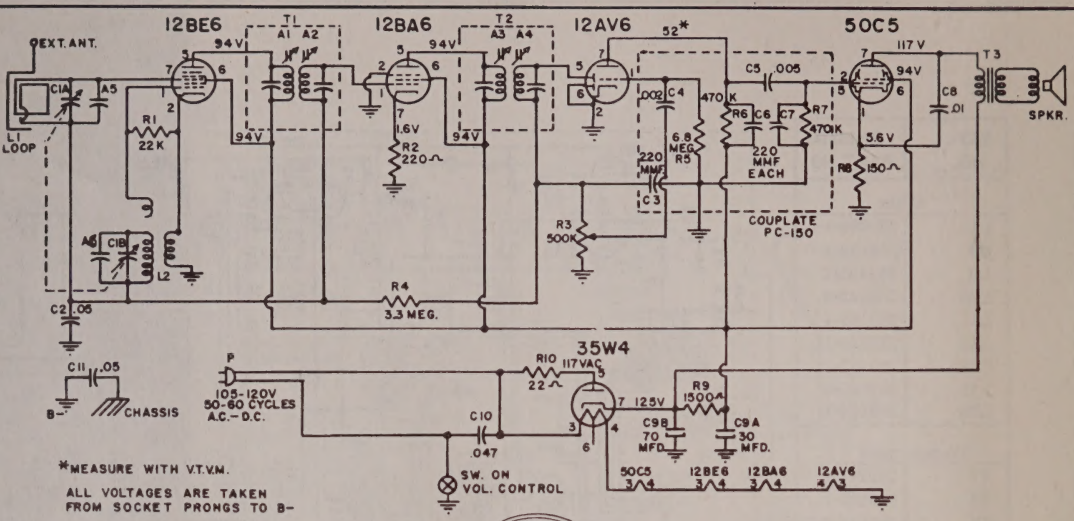


NOTES:

1. ALL RESISTORS ARE 1/2W WITH VALUES IN OHMS UNLESS OTHERWISE STATED. K 1,000 OHMS, MEG MEGOHMS.
2. ALL CAPACITORS ARE IN MMF UNLESS OTHERWISE NOTED MFD. MICROFARAD.
3. HEAVY LINES INDICATE SIGNAL PATH. ARROWS INDICATE DIRECTION.
4. *INDICATED FREQUENCIES ARE FOR PRELIMINARY ALIGNMENT ONLY. FINAL ALIGNMENTS SHOULD BE MADE WITH A SWEEP GENERATOR.
5. VOLTAGES MEASURED WITH VACUUM TUBE VOLTMETER. VOLUME, CONTRAST AND BRIGHTNESS CONTROLS SET AT MINIMUM. ALL OTHER CONTROLS IN NORMAL OPERATING POSITIONS. ANTENNA TERMINALS SHORTED AND CHANNEL SELECTOR SET AT AN UNUSED CHANNEL.
6. WAVEFORMS TAKEN AND PEAK TO PEAK VOLTAGES MEASURED WITH A 5 MC BAND WIDTH OSCILLOSCOPE (TEKTRONIX).
7. TUBE FILAMENTS 'X' DENOTES ORANGE LEAD AND IS TIED TO +150 VOLTS.

BENDIX MODELS KS21CU, TS17DS, DU, TS21CU, TW17D (CH. T17-4, -5, -8)

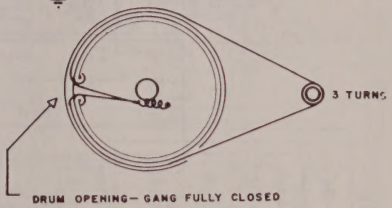
Schematic Diagram Courtesy of Bendix Aviation Corporation



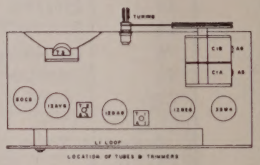
ALIGNMENT DATA

(Variable Condenser Fully Open)

Generator Frequency	Adjust Trimmers
I.F. 455 KC	A4, A3, A2, A1
R.F. 1640 KC	A6,



DIAL-CORD STRINGING DIAGRAM



REPLACEMENT PARTS LIST

PART NO.	SYMBOL NO.	DESCRIPTION
		ELECTRICAL COMPONENTS
275129-1		CABINET ASSEMBLY—Walnut, Includes Ivory Front (Model No. 953B)
275129-2		CABINET ASSEMBLY—Ivory, Includes Ivory Front (Model No. 953D)
275129-3		CABINET ASSEMBLY—Green, Includes Gray Front (Model No. 953C)
275129-4		CABINET ASSEMBLY—Gray, Includes Green Front (Model No. 953A)
275115	L2	COIL—Oscillator
275124	C1a,b	CONDENSER—Variable, 2-Section with Drum and Shaft for Pointer
267001-503	C2,11	CONDENSERS—P.T., .05 MFD. 400V
267045-103	C8	CONDENSER—P.T., .01 MFD. 600V
267013	C9a,b	CONDENSER—Electrolytic, 70-30 MFD. 150V
267055-473	C10	CONDENSER—Molded Paper, .047 MFD 400V
268910-2	P	CORD—Power
275114	C3,4,5, 6,7;R5, 6,7	COUPLATE—Molded Unit
275125		DIAL—Drive Assembly
275128		DIAL—Pointer Assembly
275126		DIAL—Spring
275119		FASTENERS—Back
275136-1		KNOB—Selector, Ivory (Models 953B, 953D)
275136-2		KNOB—Selector, Gray (Model No. 953C)
275136-3		KNOB—Selector, Green (Model No. 953A)
275122-1		KNOB—Volume, Switch, Ivory (Models No. 953B, 953D)
275122-2		KNOB—Volume, Switch, Gray (Model No. 953C)
275122-3		KNOB—Volume, Switch, Green (Model No. 953A)
275118-1	L1	LOOP—Antenna and Rear Cover Assembly
RC23A223M	R1	RESISTOR—22K ohms, 1/2W
RC23A221K	R2	RESISTOR—220 ohms, 1/2W 10%
275113	R3	RESISTOR—.5 Meg ohms Volume Control with Switch
RC23A335M	R4	RESISTOR—3.3 Meg ohms 1/2W
RC23A151M	R8	RESISTOR—150 ohms, 1/2W
RC24A152M	R9	RESISTOR—1500 ohms 1W
RC23A220M	R10	RESISTOR—22 ohms 1/2W
275110	T3	SPEAKER—Assembly Includes 4" PM SPK and 3/8 x 3/8 output transformer
275112	T1,2	TRANSFORMERS—IF

ELECTRICAL COMPONENTS - Continued

BENDIX MODELS 935A, B, C, D

Schematic Diagram Courtesy of Bendix Aviation Corporation

PHOTOFACT® Folder with CIRCUITRACE®

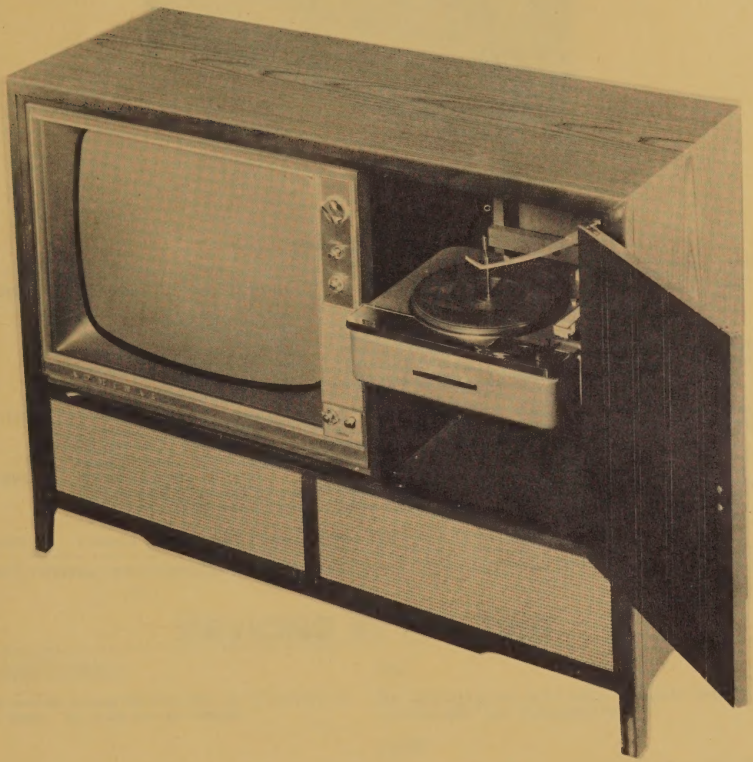
ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B



ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B

MODEL STG24K131

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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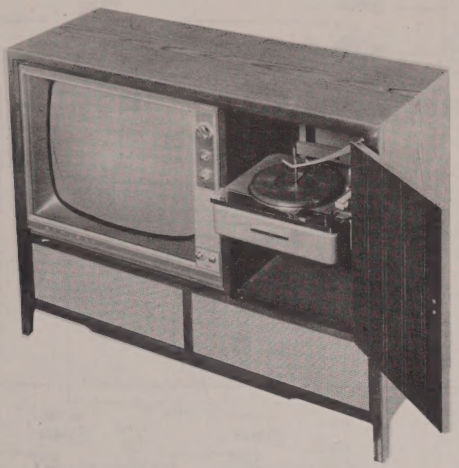
PHOTOFACT® Folder with CIRCUITRACE®

ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B

ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B



MODEL STG24K131

TRADE NAME	ADMIRAL MODELS	TV Chassis	Stereo Audio Amp.	VHF Tuner	UHF Tuner
	CG24K131, 132, 133;	20K7 (Run 10, 11) or	.....	94E184-14	
	TG24K120, 122, 123	20K7B (Run 10, 11)	.....	94E188-7	
	CG24UK131, 132, 133;	20UK7 (Run 10, 11) or	.....	94E164-13	94E162-8
	TG24UK131, 132, 133	20UK7B (Run 10, 11)	.....	94E188-8	94E162-8
	STG24K131, 132, 133	20L7 (Run 10, 11)	3X1	94E164-14	

MANUFACTURER	Admiral Sales Corp., Service Division, 903 Morrissey Drive, P.O. Box 845, Bloomington, Illinois
TYPE SET	Television Receiver ("STG" Models have Stereo Audio Amp. with 4 Speed Automatic Record Changer *)
TUBES	Chassis 20K7, 20K7B: VHF - Seventeen Chassis 20L7 & 3X1: VHF - Eighteen Chassis 20UK7, 20UK7B: UHF - Eighteen
POWER SUPPLY RATING	110-120 Volts AC, 60 Cycle Chassis 20L7 & 3X1 with Selector (Function Switch) in TV Position: 170 Watts, 1.5 Amp. @ 117 Volts AC Chassis 20L7 & 3X1 with Selector (Function Switch) in Stereo Position: 120 Watts, 1.1 Amp. @ 117 Volts AC, Less Phono Motor
TUNING RANGE	Channels 2 thru 13 VHF, 14 thru 83 UHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

* FOR SERVICE INFORMATION ON RECORD CHANGER #RC7EOG-17W OR #RC7FOG-17W - SEE PHOTOFACT SET 529 FOLDER 3

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

Remove 4 screws holding the trim strip at the top edge of the safety glass. Tilt glass out and remove.

FUSE

A fuse wire is used for filament protection. (For location, see M1 in photo "Chassis - Bottom View".)

FUSE DEVICE

A Circuit Breaker is used for low voltage power supply protection, and may be reset by depressing the reset button. (For location, see "Tube Placement Chart".)

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator, remove Channel Selector knob.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

FOCUS

The focus may be varied by connecting the lead from pin 6 of the picture tube (thru 270K resistor) to various voltage points. (For location, see photo "Cabinet - Rear View".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Lock Coil Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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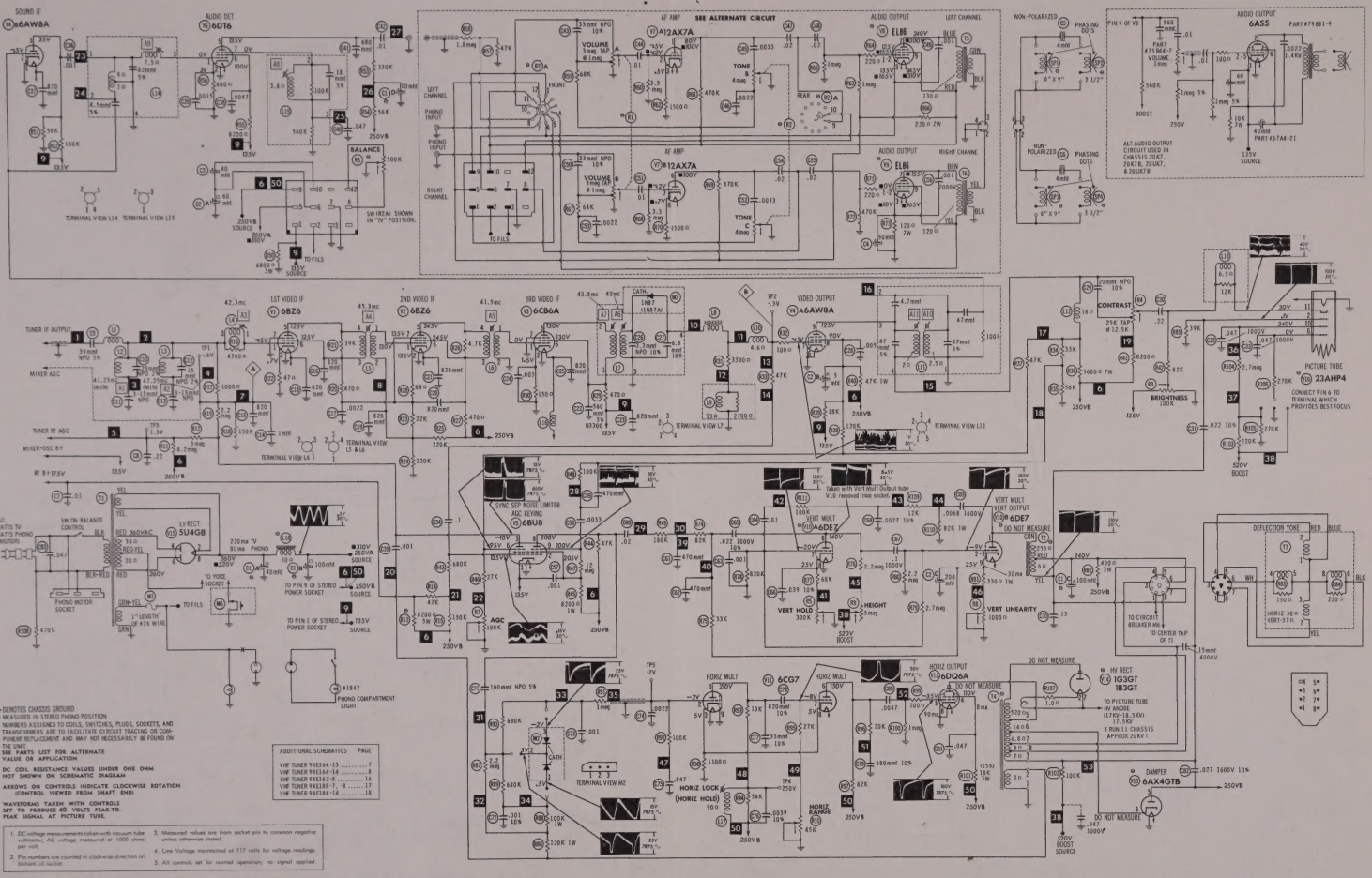
KC791

SET 542 FOLDER 1


SOUND IF
AUDIO DET
AF AMP
SEE ALTERNATE CIRCUIT
AUDIO OUTPUT
LEFT CHANNEL
RIGHT CHANNEL
NON-POLARIZED
PHASING DOTS
AUDIO OUTPUT
6A55
PART #79881-9
ALT AUDIO OUTPUT CIRCUIT USED IN CHASSIS 20K7, 20K7B, 20UK7, & 20UK7B
135V SOURCE
TERMINAL VIEW L14
TERMINAL VIEW L15
SW (REAR SHOWN IN "IN" POSITION.
TO F1LS
TUNER IF OUTPUT
MIXER AGC
TUNER RF AGC
MIXER-OSC B+
RF B+ 125V
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO OUTPUT
TERMINAL VIEW L6
TERMINAL VIEW L7
TERMINAL VIEW L11
CONTRAST
BRIGHTNESS
PICTURE TUBE
23AHP4
CONNECT PIN 6 TO TERMINAL WHICH PROVIDES BEST FOCUS
117VAC
170 WATTS TV
170 WATTS PHONO
(LESS MOTOR)
SW ON BALANCE CONTROL
PHONO MOTOR SOCKET
TO YOKE SOCKET
TO F1LS
1" LENGTH OF #26 WIRE
TO PIN 9 OF STEREO POWER SOCKET
TO PIN 1 OF STEREO POWER SOCKET
#1847
PHONO COMPARTMENT LIGHT
SYNC SEP NOISE LIMITER
AGC KEYING
AGC
VERT MULT
VERT MULT OUTPUT
VERT HOLD
HEIGHT
VERT LINEARITY
DEFLECTION YOKE
TO CIRCUIT BREAKER M6
TO CENTER TAP OF T1
HORIZ MULT
HORIZ OUTPUT
HORIZ LOCK (HORIZ HOLD)
HORIZ RANGE
DO NOT MEASURE
HV RECT
1G3GT
1B3GT
TO PICTURE TUBE HV ANODE (LTXV-18, 5XV) 17,500V
(RUN 11 CHASSIS APPROX 20KV)
DAMPER
6AX4GTB
135V SOURCE
250V SOURCE
320V BOOST SOURCE
TERMINAL VIEW M2
DENOTES CHASSIS GROUND
MEASURED IN STEREO PHONO POSITION
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 40 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
1. DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2. Pin numbers are counted in clockwise direction on bottom of socket.
3. Measured values are from socket pin to common negative unless otherwise stated.
4. Line Voltage maintained at 117 volts for voltage readings.
5. All controls set for normal operation; no signal applied
ADDITIONAL SCHEMATICS PAGE
VHF TUNER 94E164-13 7
VHF TUNER 94E164-14 8
UHF TUNER 94E162-6 16
VHF TUNER 94E188-7, -8 17
VHF TUNER 94E188-14 18
A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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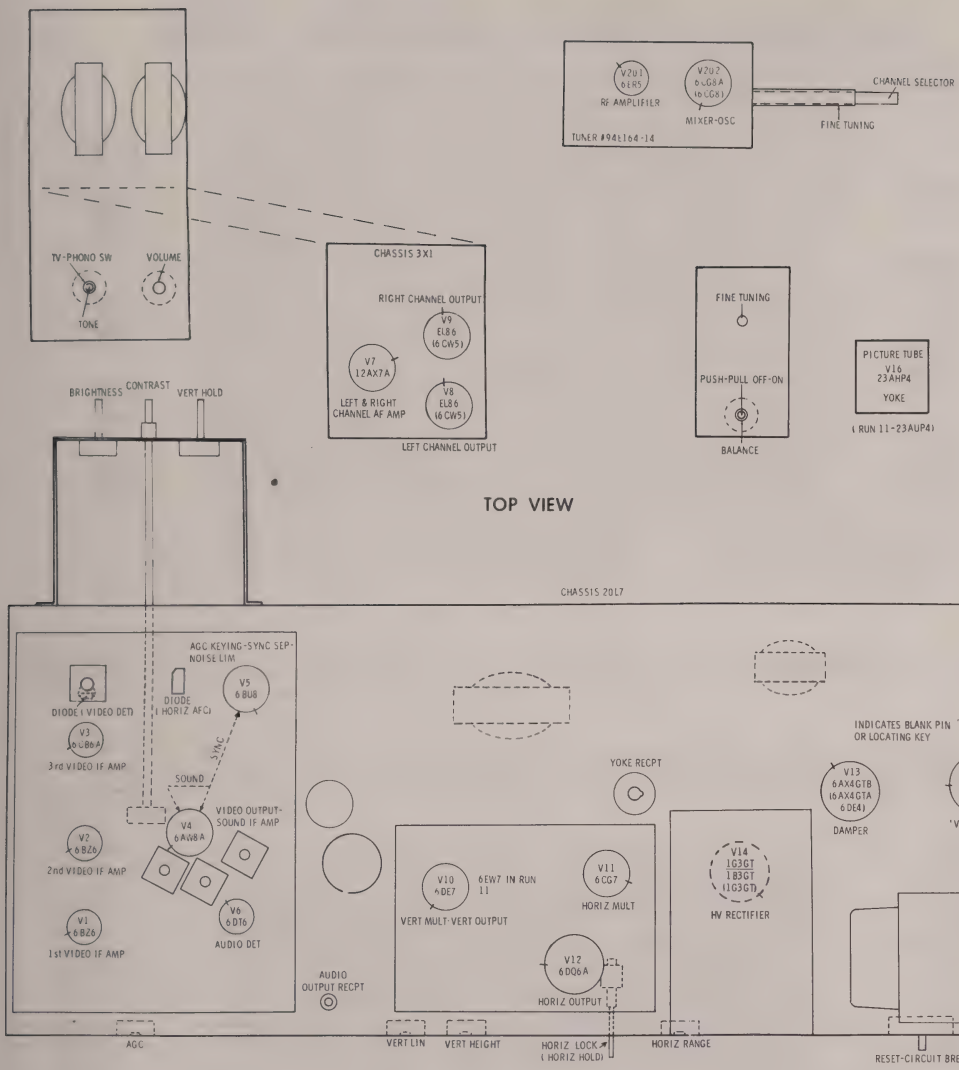
ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B

ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B

FOLDER 1

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

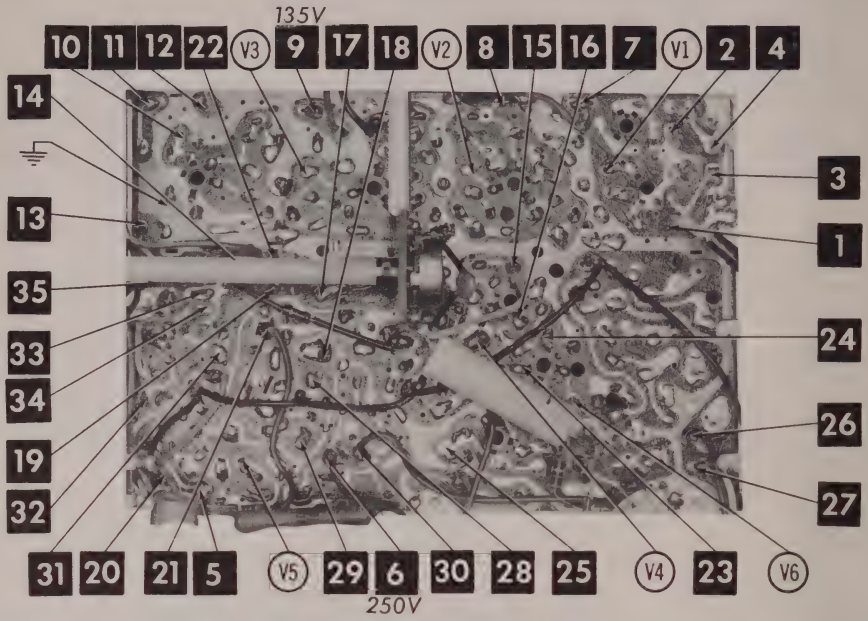
POWER SUPPLY FAILURE
No raster, no sound Circuit Breaker, V15, Fuse Wire (Fil.), V8

SWEEP FAILURE
No raster, has sound V11, V12, V13, V14, V16
No vertical deflection V10
Poor vert. linearity or foldover V10
Poor horiz. linearity or foldover V11, V12, V13
Narrow picture V11, V12, V13, V15
Vert. off freq. V10
Horiz. off freq. Diode (Horiz. AFC), V11

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V16
Has pic, no sound V4, V6, V7, V8
Overloaded picture V5

SYNC FAILURE
No vert. sync V5
No horiz. sync V5
No vert. or horiz. sync V5

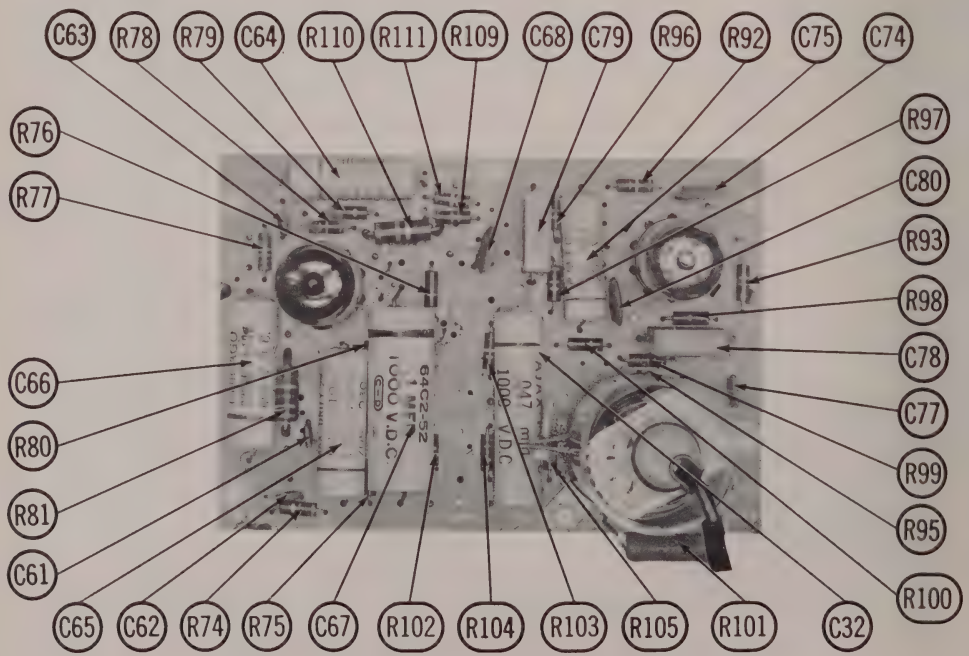
NOTE: Defective V8 (Audio Output) could cause both sound and picture failure (same applies for 6AS5 on single audio output chassis).



A Howard W. Sams CIRCUITRACE Photo

MAIN PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



HORIZ. - VERT. SWEEP PRINTED BOARD

MAIN PRINTED BOARD (CAPACITOR IDENT.)

(RESISTOR IDENT.)

FOLDER 1

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The high voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8606, 8606L, 8282, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Connect the negative lead of a 3 volt bias supply to point (A) thru a 10K resistor. Positive to chassis.
Connect a jumper across the antenna terminals.
Connect a 270mmf capacitor across the VTVM leads.
Set Contrast control fully clockwise.

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
1.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	41.25 MC (Unmod)	Any non-interfering channel	DC probe thru 47K to point (B). Common to chassis. (Across Video Det. load)	A1	Use high generator output. Adjust for MINIMUM deflection.
2.	"	"	47.25MC	"	"	A2	"
3.	"	"	42.3MC	"	"	A3	Use only enough generator output to provide a usable indication on VTVM. Adjust for maximum deflection.
4.	"	"	45.3MC	"	"	A4, & Mixer Plate Coil	"
5.	"	"	41.5MC	"	"	A5	"
6.	"	"	42.0MC	"	"	A6	"
7.	"	"	43.5MC	"	"	A7	"

OVERALL VIDEO IF RESPONSE CHECK

Connect the negative lead of a 3 volt bias supply to point (A). Positive to chassis.
Set Contrast fully clockwise.
If an external marker is used, couple loosely to sweep generator lead.
Connect a 270mmf capacitor across the scope leads.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
8.	Direct	High side to ungrounded tube shield floating over Mixer-Osc. tube (V202). Low side to chassis.	43MC (10MC Swp)	41.25MC 42.0MC 43.5MC 45.0MC 45.75MC 47.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point (B). Low side to chassis. (Across Video Det. load)		Check for response similar to Fig. 1 with markers as shown. If necessary, retouch Mixer Plate Coil to position 45.75 MC marker and A7 to position 43.5MC marker and to correct shape of curve.

SOUND IF ALIGNMENT

Tune in the strongest TV station available in the area. Adjust the set for normal operation.
Turn A8 slowly counterclockwise until a buzz is heard in the sound, then turn clockwise for maximum undistorted sound. (There may be two points approximately 1/2 turn apart at which the sound is loud. Set slug at center range of second loud point as slug is turned clockwise).
Reduce the signal at the antenna terminals (by use of an adjustable attenuator or disconnecting the antenna) until a strong hiss is heard in the sound. Carefully adjust A9 and A10 for maximum undistorted sound with MINIMUM hiss. If the hiss disappears during alignment, reduce the signal more until the hiss returns and readjust A9 and A10. If the sound is unsatisfactory, repeat procedure.

4.5MC TRAP ALIGNMENT

Adjust A11 for MINIMUM 4.5MC beat pattern in the picture. (4.5MC beat interference appears as a very fine crosshatch pattern on the screen.)

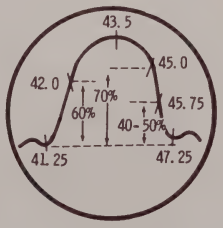
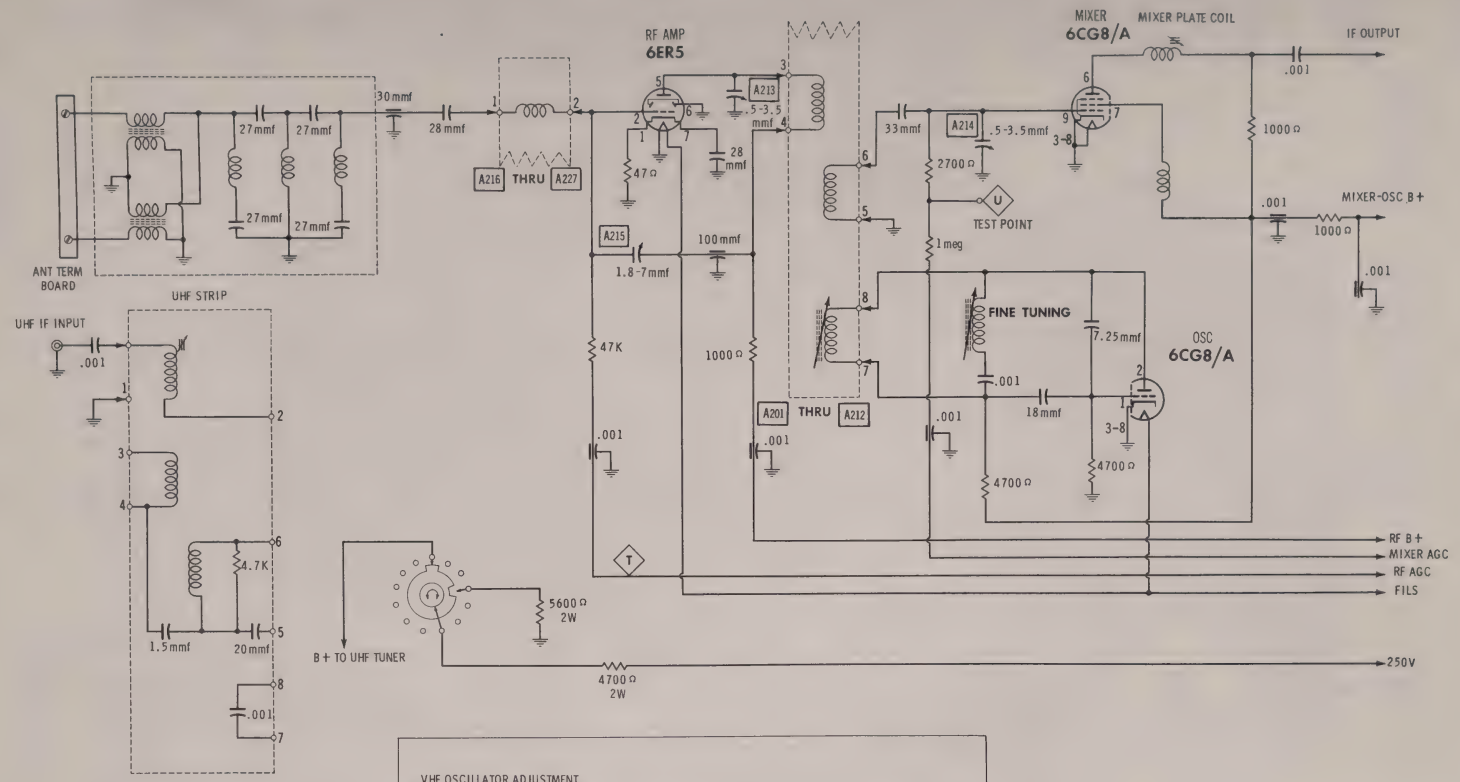


FIG.1



VHF OSCILLATOR ADJUSTMENT

TO TOUCH UP THE VHF OSCILLATOR, REMOVE VHF CHANNEL SELECTOR KNOB. THE ADJUSTMENTS (ONE SLUG FOR EACH CHANNEL) ARE ACCESSIBLE THRU A HOLE IN THE CHANNEL INDICATOR DISC AND GUIDE FUNNEL. (IT MAY BE NECESSARY TO ROTATE FINE TUNING TILL GUIDE FUNNEL IS VISIBLE THRU THE HOLE). SEE PAGE 10 FOR COMPLETE ALIGNMENT INSTRUCTIONS.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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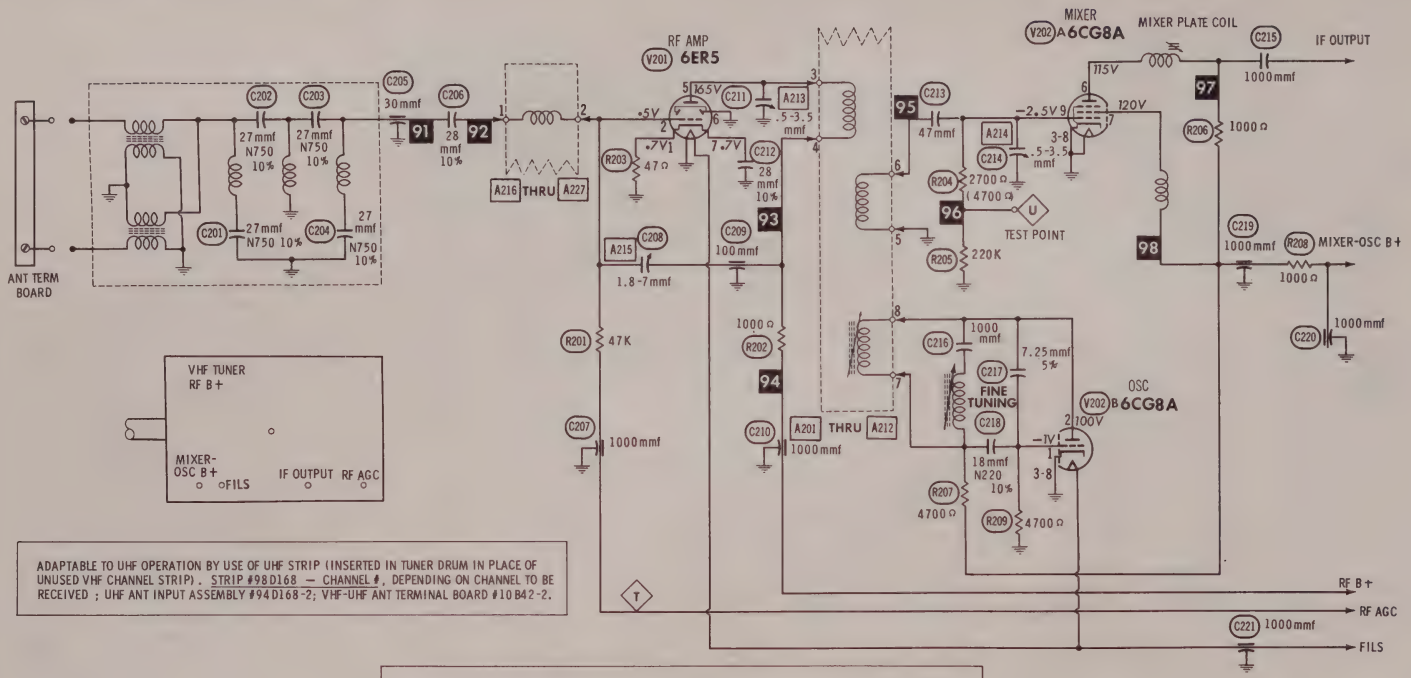
VHF TUNER WITH UHF PROVISIONS 94E164-13

ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B



ADAPTABLE TO UHF OPERATION BY USE OF UHF STRIP (INSERTED IN TUNER DRUM IN PLACE OF UNUSED VHF CHANNEL STRIP). STRIP #98D168 — CHANNEL #, DEPENDING ON CHANNEL TO BE RECEIVED ; UHF ANT INPUT ASSEMBLY #94D168-2; VHF-UHF ANT TERMINAL BOARD #10B42-2.

VHF OSCILLATOR ADJUSTMENT

TO TOUCH UP THE VHF OSCILLATOR, REMOVE VHF CHANNEL SELECTOR KNOB. THE ADJUSTMENTS (ONE SLUG FOR EACH CHANNEL) ARE ACCESSIBLE THRU A HOLE IN THE CHANNEL INDICATOR DISC AND GUIDE FUNNEL. (IT MAY BE NECESSARY TO ROTATE FINE TUNING TILL GUIDE FUNNEL IS VISIBLE THRU THE HOLE).
SEE PAGE 10 FOR COMPLETE ALIGNMENT INSTRUCTIONS.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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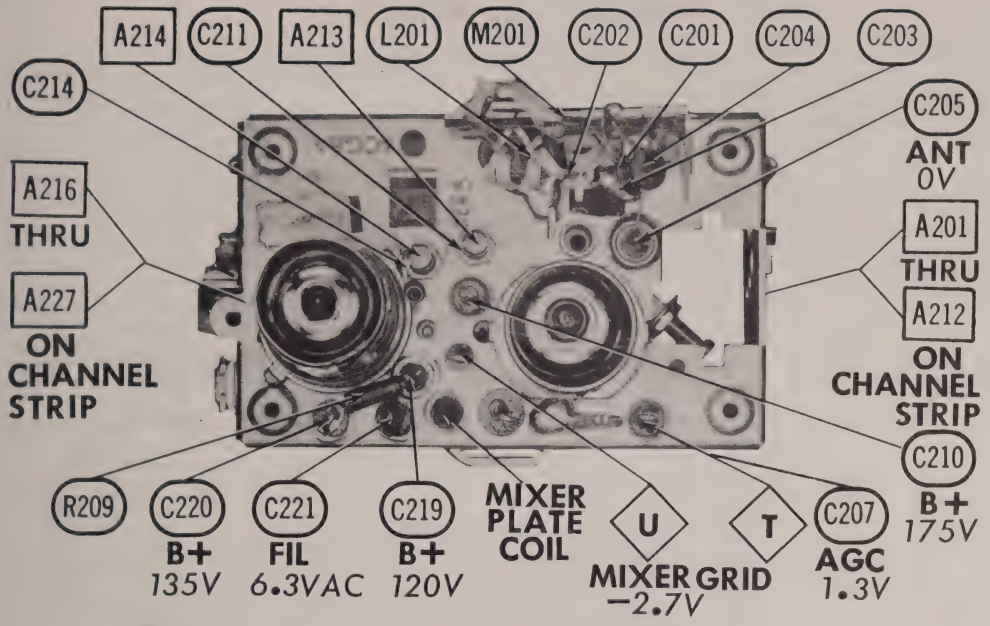
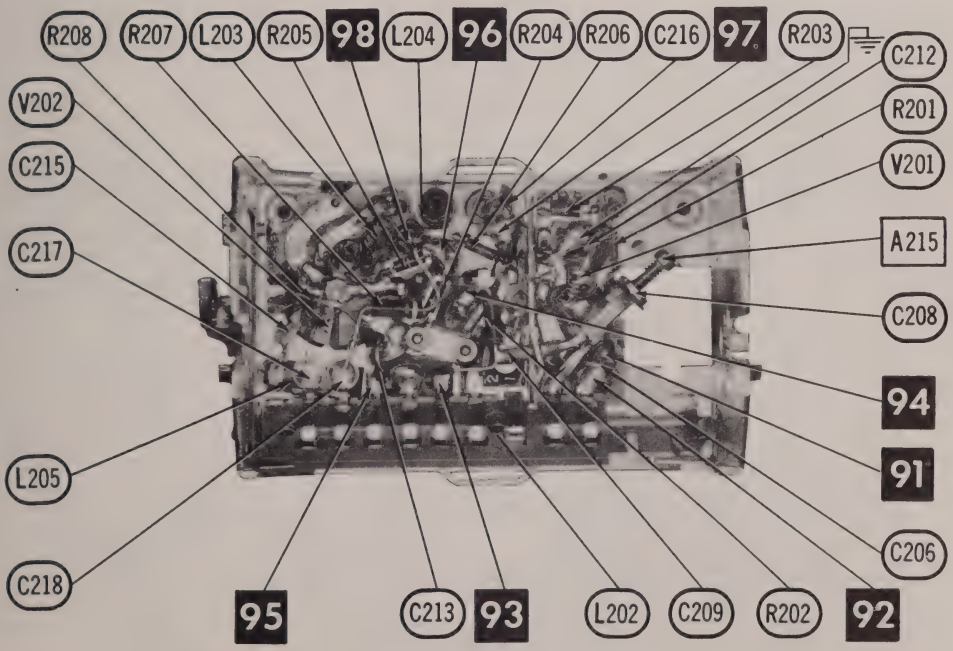
VHF TUNER 94E164-14



VHF TUNER 94E164-14 - TOP VIEW



A Howard W. Sams CIRCUITRACE® Photo

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

VHF TUNER 94E164-14 - BOTTOM VIEW

TUNER ALIGNMENT INSTRUCTIONS
94E164-13, -14; 94E184-14

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201 thru A212 ... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8987
WALSCO # 2531
A213 thru A215 .... GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2525

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A201	Adjust to place sound marker in trap notch as in Fig. 201. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A202	
			201MC	199.25MC 203.75MC	11		A203	
			195MC	193.25MC 197.75MC	10		A204	
			189MC	187.25MC 191.75MC	9		A205	
			183MC	181.25MC 185.75MC	8		A206	
			177MC	175.25MC 179.75MC	7		A207	
			85MC	83.25MC 87.75MC	6		A208	
			79MC	77.25MC 81.75MC	5		A209	
			69MC	67.25MC 71.75MC	4		A210	
			63MC	61.25MC 65.75MC	3		A211	
			57MC	55.25MC 59.75MC	2		A212	

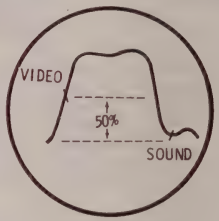


FIG. 201

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC sweep unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.
Connect the negative lead of a 4.5 volt bias supply to point ⓣ. Positive to chassis.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
2.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⓓ. Low side to chassis.	A213, A214, A215	Adjust A213 and A214 for maximum amplitude and symmetry with markers as shown in Fig. 202. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A215 to obtain MINIMUM response on the scope. Reduce bias.
3.	"	"	213MC	211.25MC 215.75MC	13	"	A216	Adjust for maximum amplitude of response similar to Fig. 202. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

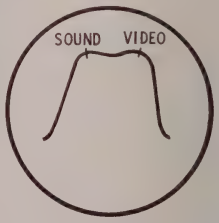


FIG. 202

TV PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	1st Video IF Amp.	6BZ6	V8	Left Channel Output	EL86 (6CW5) ①
V2	2nd Video IF Amp.	6BZ6	V9	Right Channel Output	EL86 (6CW5) ①
V3	3rd Video IF Amp.	6CB6A	V10	Vert. Mult. - Vert. Output	6DE7 ②
V4	Video Output - Sound IF Amp.	6AW8A	V11	Horiz. Mult.	6CG7
V5	AGC Keying - Sync Sep. - Noise Limiter	6BU8	V12	Horiz. Output	6DQ6A
V6	Audio Detector	6DT8	V13	Damper	6AX4GTB (6AX4GTA, 6DE4) ①
V7	Left Channel AF Amp. - Right Channel AF Amp.	12AX7A	V14	HV Rectifier	1G3GT/1B3GT (1G3GT) ①
			V15	LV Rectifier	5U4GB

① Alternate

② Run 11 Chassis.

PICTURE TUBE

ITEM No.	REPLACEMENT DATA					NOTES
	ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
V16	23AHP4 * 23AUP4 †		23AHP4 ①		23AHP4 ②	① Aluminized ② Silver Screen "85" * Used in Run 10. † Used in Run 11 and later.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	ADMIRAL PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲40	400	67D15-350	AFHS4-08-50	D0477	FP333.95	TMT-3799	TVLS-3698 *	Note 1
B	■100	400			BR10045	TC805	TD-100-450	TVA-1718	
C	▲100	400							
D	10	400							
C2A	■60	200	67D15-351	AFH3-84-65	C0636	WP319.6	TMD-2280	TVLS-3468 *	
B	▲5	200			BR20015	TC3501	TD-200-150	TVA-1423	
C	200	50							
C3	40	200	67A4-21	PRS1580	BR4025	TC58	TD-40-250	TVA-1511	
C4	50	15	67D49-3	PWE15050	BBR50-25	TC29	TD-50-25	TVA-1206	
C5	4	16NP	67A40-2	PRS7405	BBR4-150	TCN504		TVANS-1202.2*	
C6	4	16NP	67A40-2	PRS7405	BBR4-150	TCN504		TVANS-1202.2*	

Note 1. C1D not used in Chassis 20K7, B; 20UK7, B . 3 Section used for C1A, B, C (40-100-100 ② 350V, Part #67D15-323).

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

ITEM No.	RATING			REMARKS	REPLACEMENT DATA					
					AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C8	.22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C9	39	NPO	5%			TCZ-39	C10Q39C		CNO-439	10TCC-Q39
C10	23	NPO	2%	#65D6-110		TCZ-24				
C11	3-13	NPO		#66A38-7						
C12	15	NPO	2%	#65D6-140		TCZ-15				
C13	3-13	NPO		#66A38-7						
C14	1	100V			P288N-1.0			1DP-5-105	GEM-21	2TM-M1
C15	820				DI-821	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C16	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C17	.0022				BPD-0022	DD-222	BYA10D22	CCD-222	B-222	10TS-T82
C18	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C19	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C20	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C21	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C22	560	N3300	5%	#65D6-131				*		
C23	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C24	.005				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	820				DI-820	DD-821	BYA10T82	CCD-820	B-382	10TS-T82
C26	3.3	NPO	10%		NPO-DI 3.3	DTZ-3R3	C10V33C	CCTO-3R3	CNO-533	10TCC-V33
C27	6.8		10%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C28	.005				BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C29	20	NPO	10%		NPO-DI 20	DTN-20	C10Q2C	CCTO-200	CNO-422	10TCC-Q20
C30	.22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-6122	4TM-P22
C31	.022	600V	10%		V84C6S22-10%		PM6S22	6DP-2-223	GEM-1612	6TM-S22
C32	.047	1000V			P1088N-047		CUB10S47	16DP-5-473	GEM-10147	10TM-S47
C33	.047	1000V			P1088N-047		CUB10S47	16DP-5-473	GEM-10147	10TM-S47
C34	.1	400V			P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-P10
C35	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C36	.001				BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C37	820				DI-820	DD-821	BYA10T82	CCD-821	B-382	10TS-T82
C38	.0047				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C39	.0015				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C40	.047	400V			P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C41	680				DI-680	DD-681	BYA10T68	CCD-681	B-368	10TS-T68
C42	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C43	33	NPO	10%		NPO-DI 33	DTZ-33	C10Q33C	CCTO-330	CNO-439	10TCC-Q33
C44	.01				BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C45	.0033				BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33

TV PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING		REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C46	.0022			BPD-0022	DD-222	BYA10D22	CCD-222	B-322	5HK-D22
C47	.02			BPD-02	DD-203	BYB5S2	CCD-203	B-130	5HK-S20
C48	.02			BPD-02	DD-203	BYB5S2	CCD-203	B-130	5HK-S20
C49	.001 2000V			HVD-20-1000	DD30-102	HVB3D1	3CCD-102	2HV-210	BL-D10
C50	33 NPO	10%		NPO-01.33	DTZ-33	C09J3	CCTO-330	CKO-433	DTCC-Q33
C51	.01			BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	.0033			BPD-0033	DD-332	BYA10D33	CCD-332	B-333	5HK-D33
C53	.0022			BPD-0022	DD-222	BYA10D22	CCD-222	B-322	5HK-D22
C54	.02			BPD-03	DD-203	BYB5S2	CCD-203	B-130	5HK-S20
C55	.02			BPD-03	DD-203	BYB5S2	CCD-203	B-130	5HK-S20
C56	.001 2000V			HVD-20-1000	DD30-102	HVB3D1	3CCD-102	2KV-210	BL-D10
C57	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C58	.0033			BPD-0033	DD-332	BYA10D33	CCD-332	B-333	5HK-D33
C59	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C60	.02			BPD-02	DD-203	BYB5S2	CCD-203	B-130	5HK-S20
C61	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C62	470			DI-470	DD-471	BYA10T47	CCD-471	B-347	10TS-T47
C63	.001			BPD-001	DD-103	BYA10D1	CCD-103	B-310	5HK-D10
C64	.01 600V			P688N-01	DS-103	CUB5S1	6DP-3-103	GEM-511	6TM-S10
C65	.022 1000V	10%				DPM5S322	16DP-5-223	GEM-1612	10TM-S22
C66	.039 600V	10%		P684CM-039		DPM5S339	8DP-3-393	GEM-1614	6TM-S39
C67	1 1000V			P1088N-1		CUB10P1		GEM-1001	10TM-P10
C68	.0027	10%		DI-2700		DPM5S2D7	CCD-272		10TS-D27
C69	.0068 1600V			P1684CM-0068		CUB5D68	16DP-3-702	GEM-16368	MS-068
C70	.15 600V			P688N-15		CUB5P15	6DP-5-304	GEM-6015	6TM-P15
C71	100 NPO	5%			DTZ-100	C07J1C	CCTO-100	CKO-310	DTCC-T10
C72	.001	10%		DI-1000	DD-102	5RS1X	CCD-102	GP310	10TS-1X0
C73	.001			BPD-001	DD-102	BYA10D1	CCD-102	B-310	5HK-D10
C74	.0022			BPD-0022	DD-222	BYA10D22	CCD-222	B-322	5HK-D22
C75	.047 200V			P283N-047	DD-473	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C76	.0039	10%		1684-0039		1S3D39	CM-2SS-392K	MC1462.5	MS-339
C77	33	10%		DI-33	DD-330	1J0G33	CCD-330	GP433	10TS-Q33
C78	820	10%		1469-00082		5RST82	CM-19B-821K	MCE251	MS-382
C79	680	10%		1469-00068		5RST68	CM-19B-681K	MC1949	MS-368
C80	.0047			BPD-0047	DD-472	BYA10D47M	CCD-473	B-347	5HK-D47
C81	.047 400V			P489N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C82	.027 1600V	10%				DPM5S2S3	16DP-5-303	GEM-1613	MD-S3
C83	.047 600V			P688N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

Admiral Part Number
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No	RATING		REPLACEMENT DATA ADMIRAL PART No.	CENTRALAB PART No	CLAROSTAT PART No.	CTS - IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg linear Tap	1	75B57-4 ①					Volume, Left Channel
B	3meg linear Tap	1						Volume, Right Channel
R2A	Switch		75D49-5 ②					Selector (Stereo-TV) Tone, Left Channel
B	4meg	1						Tone, Right Channel
C	4meg	1						Brightness
R3A	100K	1	75D13-110	AB-36	A47-75K-Y	B11-138	U40	
B	Shaft			AK-33	RS-3/16	SK9	DS-37	Contrast
R4	25K 12.5K Tap	1	75D20-136					
R5A	300K	1	75D13-111	AB-30	A47-300K-S	B11-131	U46	Vert. Hold
B	Shaft			AK-33	RS-3/16	SK9	DS-37	
R6A	500K	1	75D45-4 ②	F1-40			* UE4225-S	Balance Push-Pull Off-On
B	Switch			RPL-41			PTA15L	AGC
R7A	100K	1	75D20-118	AB-36	B47-100K-S	B17-128	PTA15L	
B	Shaft			AK-1	Not Req.	TM4	Not Req.	Vert. Linearity
R8A	1000Ω	1	75D20-128	AB-5	B47-1500-S	B11-108	TA 13L	
B	Shaft			AK-1	Not Req.	SK9	Not Req.	
R9	5meg	1	75D20-119	TT-87	B47-5meg-S	B1L-5	PTA56L	Height
R10A	45K	1	75D20-131	TT-31	B47-50K-S	B11-123	PTA54L	Horiz. Range
B	Shaft			Not Req.	Not Req.	TM-4		

① Chassis 20KT, B, 20UKT, B use 1meg volume with switch (Part #75B44-7).
② Not used in Chassis 20KT, B, 20UKT, B.
* "STA-LOC" Equivalent: RA58A, RUP18A, OS125.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No	WORKMAN TV PART No	REMARKS
R11	8.2meg			
R12	3.0meg 5%	PW5-8200	TW-SQ-8200	Note 1
R13	8200Ω 5W			
R14	47K			
R15	150K			
R16	4700Ω 5%			
R17	1000Ω			
R18	150K			
R19	2.2meg			
R20	470Ω			
R21	39K			
R22	47K			
R23	22K			
R24	220K			
R25	220K			
R26	4700Ω			
R27	470Ω			
R28	68Ω			
R29	470Ω			
R30	1800Ω			
R31	3300Ω			
R32	100Ω			
R33	47K			
R34	33K			
R35	56K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No	WORKMAN TV PART No	REMARKS
R36	5600Ω 7W	PW7-5600	TW-SQ-5600	
R37	47K			
R38	120K			
R39	18K			
R40	47K 1W			
R41	8200Ω			
R42	82K			
R43	680K			
R44	47K			
R45	8200Ω 1W			
R46	27K			
R47	12meg			
R48	100K			
R49	180K			
R50	6800Ω 3W	PW3-6800	3G-6800	
R51	56K			
R52	100K			
R53	330K			
R54	56K			
R55	8200Ω			
R56	680Ω			
R57	47K			
R58	1.8meg			
R59	68K			
R60	3.3meg			

RESISTORS (cont)

ITEM No.	RATING	REPLACEMENT DATA IRC PART No	WORKMAN TV PART No	REMARKS
R61	470K			
R62	1500Ω			
R63	1meg			
R64	220Ω			
R65	1meg			
R66	220Ω 2W			
R67	68K			
R68	3.3meg			
R69	470K			
R70	1500Ω			
R71	220Ω			
R72	470K			
R73	120Ω 2W			
R74	82K			
R75	33K			
R76	2.2meg			
R77	68K			
R78	820K			
R79	2.2meg			
R80	2.2meg			
R81	330Ω 1W			
R82	400Ω 3W	PW3-400	3G-400	
R83	150Ω			
R84	220Ω			
R85	33K			
R86	120K 1W			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No	WORKMAN TV PART No	REMARKS
R87	2.2meg			
R88	100K 1W			
R89	680K			
R90	680K			
R91	1meg			
R92	100K			
R93	10K			
R94	56K			
R95	27K			
R96	20K			
R97	82K			
R98	1000Ω 5%			
R99	100Ω			
R100	1meg			
R101	18K 3W	PW3-18K	3G-18K	(151K) *
R102	100K			
R103	220K			
R104	2.7meg			
R105	270K			
R106	270K			
R107	1.0Ω			
R108	470K			
R109	12K			
R110	82K 1W			
R111	100K			

Note 1. Chassis 20KT8, 20UKT, B use 8200Ω 4 watt in this application. * Alternate Value

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No	NOTES
L1	RF Choke	73B37-6					
L2	41.25MC Trap	73B37-4					
L3	47.25MC Trap	73B37-4					
L4	1st Video IF	72C132-31					
L5	2nd Video IF	72C132-39					
L6	3rd Video IF	72C132-39					
L7	4th Video IF	72B191-3					
L8	RF Choke (13uh)	73B31-4	BC-566	4622	RTC-6523	T861	
L9	Peaking (39uh)	73C5-41 ①	TV-203 †	6136 †	RTC-8579 †	T322 †	① Wound on 2700Ω Resistor
L10	RF Choke (28uh)	73B31-3	TV-192	4626	RTC-8525	T994	† Parallel with 2700Ω Resistor.
L11A	4.5MC Trap	72C185-2				T277	
B	1st Sound IF						
L12	Peaking (125uh)	73C5-30	TV-188	6174	RTC-8592	T324	
L13	Peaking (190uh)	73C5-40 ②	TV-197 ▲	6154 ▲	RTC-8597 ▲	T313 ▲	② Wound on 12K Resistor.
L14	2nd Sound IF	72C208-1				TB249	▲ Parallel with 12K Resistor.
L15	Quadrature	72C132-37					
L16	Fil. Choke (1.4uh)	73B37-2	BC-562	4604	RTC-8516	T856	

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
L17	Horiz. Stabilizer	94C17-7	TV-163	6210	RCU10	RTC-8822	HS-5	WLC-25	T102

FILTER CHOKE

ITEM No.	RATINGS CURRENT (Measured)	DC RES.	INDUCTANCE IO CURRENT 1000 ~	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
L18	.220A	50Ω	.9 Hy.	74C18-39 ①	C-2996 ②	C-2343	26C44	C-34X	① Alternate Part #74B18-39. ② Drill new mounting hole(s).

TRANSFORMER (POWER)

ITEM No.	RATING PRI.	SEC. 1	SEC. 2	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ② 1.5A	520VCT @ .220A DC	5V ④ 3A	80D78-1		P-8358		R-12TA	
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ③ 9A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Merit * PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
T2	Vert. Output Alt. Vert. Output	79C43-23 79B43-23	A-2854		VO-100 ①	26S73	A-133X	

TRANSFORMERS (SWEEP CIRCUITS) cont

ITEM No.	RATING	REPLACEMENT DATA IRC PART No	WORKMAN TV PART No	REMARKS
R112	3300Ω			
R113	100Ω			
R114	47K			
R115	33K			
R116	56K			
R117	1.8meg			
R118	68K			
R119	3.3meg			
R120	1.8meg			
R121	68K			
R122	3.3meg			
R123	1.8meg			
R124	68K			
R125	3.3meg			
R126	1.8meg			
R127	68K			
R128	3.3meg			
R129	1.8meg			
R130	68K			
R131	3.3meg			
R132	1.8meg			
R133	68K			
R134	3.3meg			
R135	1.8meg			
R136	68K			
R137	3.3meg			
R138	1.8meg			
R139	68K			
R140	3.3meg			
R141	1.8meg			
R142	68K			
R143	3.3meg			
R144	1.8meg			
R145	68K			
R146	3.3meg			
R147	1.8meg			
R148	68K			
R149	3.3meg			
R150	1.8meg			
R151	68K			
R152	3.3meg			
R153	1.8meg			
R154	68K			
R155	3.3meg			
R156	1.8meg			
R157	68K			
R158	3.3meg			
R159	1.8meg			
R160	68K			

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T3	Yoke (Horiz. 19MH) (90°) (Vert. 45MH) Rear Cover and Centering Device	94D-192-1 †	MDF-92 ③④⑤			DY-18A ③④⑤	Y-18 ③④⑤	Y-43-1①
	Yoke Clamp	94C170-1						YC-1
	Horiz. Output	T92T77-11 †						CL-1
T4	Alt. Horiz. Output	T9BT77-11 †						D-191
	Horiz. Output	T9ET7-14 ▲						

① Cut and tape Red and Yellow lead.
② Reading taken with vertical damping resistors removed.
③ Use original yoke damping network.
④ Use original rear cover and centering device.
⑤ Connect yoke terminal #3 to yoke plug pin #3; yoke terminals #2 and #7 to yoke plug pin #4; yoke terminal #1 to yoke plug pin #5; yoke terminal #4 to yoke plug pin #7; yoke #6 to yoke plug pin #6.
⑥ Remove damping network across terminals #1 and 2. Connect same as original.

† Less centering device and rear cover.
† Used in Run 10.
▲ Used in Run 11.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	SEC.	REPLACEMENT DATA ADMIRAL PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	2300Ω	3-4Ω	79D33-31				S-54X	
T6	2200Ω	3-4Ω	79D33-39				S-54X	

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA ADMIRAL PART No.	GUAM PART No.	NOTES
SP1	6" x 9"	PM	3-4Ω	78C138-7 ①	69A2	① Used in Models 5TG24K31, 132, 133.
SP2	3½"	PM	3-4Ω	78C148-7 ①	3A157Z4	② Used in Models CG24K31, 132, 135; CG24U K31, 132, 135; TG24K20, 122, 123; TG24U K20, 122, 123.
SP3	6" x 9"	PM	3-4Ω	78C138-7 ①	69A2	
SP4	3½"	PM	3-4Ω	78C148-7 ①	3A157Z4	
	3" x 5"	PM		78C158-4 ②		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA ADMIRAL PART No. FUSE	ADMIRAL PART No. HOLDER	LITTELFUSE PART No. FUSE	LITTELFUSE PART No. HOLDER	BUSS PART No. FUSE	BUSS PART No. HOLDER
M1	1" length of #26 wire							

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA ADMIRAL PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2		93B5-6 *	6GC1 *			* Dual Selenium Diode, Common Cathode Type. Video Detector Replace with original type.
M3	1N87	1N87 or 1N87A		1N87 1N87A	1N87 1N87A	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY

ITEM No.	REPLACEMENT DATA ADMIRAL PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		NOTES
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M4	409B33-2-1	Not Req.	17	Not Req.	26S	S1-1 * (LP) S1-3 * (78)	8TA4-S	N-8TA-S	

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M5	Tuner	94R164-14	VHF, Used in Chassis 20L7. * STANDARD COIL REPLACEMENT 6GG-4220A (* Use shafts and front mounting cover from original tuner).
	Tuner	94R184-14	VHF, Used in Chassis 20KT.
	Tuner	94R186-7	VHF, Used in Chassis 20KT8.
	Tuner	94R164-43	VHF with UHF Provisions, Used in Chassis 20UKT
	Tuner	94R186-8	VHF with UHF Provisions, Used in Chassis 20UKT8
	Tuner	94R162-8	UHF, Used in all UHF Models
M6	Circuit Breaker	84A17-2	
	Printed Board	14E268-11	IF Strip, Less All Tubes and Components, All Chassis except 20L7.
	Printed Board	14E268-12	IF Strip, Less Tubes and Components, Chassis 20L7
	Printed Board	14E257-4A	Sweep Circuit, Less Tubes and Components, All Chassis except 20L7.
	Printed Board	14E257-5A	Sweep Circuit, Less Tubes and Components, Chassis 20L7

ADMIRAL CHASSIS 20K7, 20K7B, 20L7, 20UK7, 20UK7B

FOLDER 1

TV PARTS LIST AND DESCRIPTIONS (Continued)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

DESCRIPTION	PART NO.	MODEL NO.	CG24K131	CG24UK131	CG24K132	CG24UK132	CG24K133	CG24UK133	STG24K131	STG24K132	STG24K133	TG24K120	TG24UK120	TG24K122	TG24UK122	TG24K123	TG24UK123
Safety Glass	21D111-6		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob-VHF Channel Selector	20D46-1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob-UHF Channel Selector	33C426-1			X		X		X					X		X		X
Knob-UHF Fine Tuning	20D46-1			X		X		X					X		X		X
Knob-VHF Fine Tuning	20C20-4		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob-Volume	20C40-4		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Knob- Brightness Contrast, Vertical	33C425-1		X	X	X	X	X	X				X	X	X	X	X	X
Knob- Brightness Contrast, Vertical	33C425-2								X	X	X						
Knob-Bass, Treble	20C40-3								X	X	X						
Knob-Function Selector	33C424-3								X	X	X						
Knob-Balance	33C424-2								X	X	X						
Knob-Off-On	20C40-3								X	X	X						
Cabinet	35E603-1		X	X													
Cabinet	35E603-2				X	X											
Cabinet	35E603-3						X	X									
Cabinet	35E607-11								X								
Cabinet	35E607-12									X							
Cabinet	35E607-13										X						
Cabinet	34E166-1											X	X				
Cabinet	34E166-3													X	X		
Cabinet	34E166-4															X	X

WIRING DATA

High Voltage Lead	Use BELDEN No.	8869
Shielded Hook-up Wire	Use BELDEN No.	8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No.	8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No.	8874
300Ω Tuner Input Lead	Use BELDEN No.	8225
300Ω Antenna Lead-in	Use BELDEN No.	8230 or 8275
Antenna Rotor Cable	Use BELDEN No.	8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TUNER ALIGNMENT INSTRUCTIONS

94E188–7, 8

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: A201, A202 ..... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A203 thru A214 ..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect the negative lead of a 4.5 volt bias supply to point (T). Positive to chassis.
Use 10MC sweep unless otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point (T). Low side to chassis.	A201, A202	Adjust A201 and A202 for response similar to Fig. 201 with markers on shoulders of curve.
2.	"	213MC	211.25MC 215.75MC	13	"		Check for response similar to Fig. 201. If markers fall below 70% on any channel, make compromise adjustment of A201 and A202 with channel switch set to that channel. Check all other channels to see that they have not been seriously affected.
		207MC	205.25MC 209.75MC	12			
		201MC	199.25MC 203.75MC	11			
		189MC	187.25MC 191.75MC	9			
		183MC	181.25MC 185.75MC	8			
		177MC	175.25MC 179.75MC	7			
		85MC	83.25MC 87.75MC	6			
		79MC	77.25MC 81.75MC	5			
		69MC	67.25MC 71.75MC	4			
		63MC	61.25MC 65.75MC	3			
		57MC	55.25MC 59.75MC	2			

FIG. 201

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Use 10MC sweep unless otherwise noted.

	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A203	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
		207MC	205.25MC 209.75MC	12		A204	
		201MC	199.25MC 203.75MC	11		A205	
		195MC	193.25MC 197.75MC	10		A206	
		189MC	187.25MC 191.75MC	9		A207	
		183MC	181.25MC 185.75MC	8		A208	
		177MC	175.25MC 179.75MC	7		A209	
		85MC	83.25MC 87.75MC	6		A210	
		79MC	77.25MC 81.75MC	5		A211	
		69MC	67.25MC 71.75MC	4		A212	
		63MC	61.25MC 65.75MC	3		A213	
		57MC	55.25MC 59.75MC	2		A214	

FIG. 202

UHF ALIGNMENT

This portion of the tuner has been properly aligned at the factory and is very stable. Alignment of this portion should not be attempted in the field.

VHF TUNER PARTS LIST AND DESCRIPTIONS

94E164—14

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6ER5	V202	Mixer - Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30	#94E164-94						
C206	28 10%		NPO-DI 27	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7	#94E164-97		829-7				
C209	100	#94E164-98	EF-0001	MFT-100				
C210	1000		EF-001	MFT-1000		CCF-102	CT280A	
C211	.5-3.5	#94E164-99						
C212	28 10%		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C213	47		DI-47	DD-470	L10Q47	CCD-447	GP447	10TS-Q47
C214	.5-3.5	#94E164-99						
C215	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C216	1000		BPD-001	DD-102	BYA10D1	CCD-102	GP210	10TS-D10
C217	7.25 5%	#94E164-102						
C218	18 N220 10%	#94E164-101				*		10TCR-Q18
C219	1000		EF-001	MFT-1000		CCF-102	CT280A	
C220	1000		EF-001	MFT-1000		CCF-102	CT280A	
C221	1000		EF-001	MFT-1000		CCF-102	CT280A	

Admiral Part Number.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

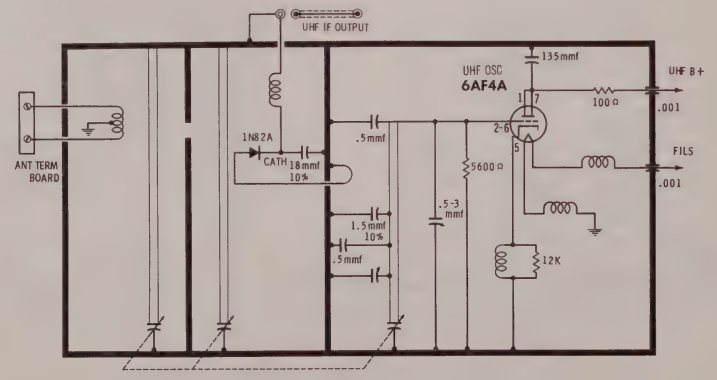
COILS (RF-IF)

ITEM No.	USE	ADMIRAL PART No.	NOTES
L201A	Ant. Trans.	700B169	
B	Trap		
C	Trap		
D	Trap		
L202A	Ant., RF, Mixer & Osc.	94D164-52	Channel 2
B	"	94D164-53	Channel 3
C	"	94D164-54	Channel 4
D	"	94D164-55	Channel 5
E	"	94D164-56	Channel 6
F	"	94D164-57	Channel 7

ITEM No.	USE	ADMIRAL PART No.	NOTES
L202G	Ant. RF, Mixer & Osc.	94D164-58	Channel 8
H	"	94D164-59	Channel 9
J	"	94D164-60	Channel 10
K	"	94D164-61	Channel 11
L	"	94D164-62	Channel 12
M	"	94D164-63	Channel 13
L203	RF Choke	94D164-67	
L204	Mixer Plate	94D164-69	
L205	Fine Tuning	94D164-68	Core #94D164-73

MISCELLANEOUS

ITEM No.	PART NAME	ADMIRAL PART No.	NOTES
M201	Input Assembly	94D164-124	VHF, Complete
	Turret Assembly	94D164-128	Less Coils
	Shaft & Cam Assembly	94D164-130	Fine Tuning
	Spring, Front	94D164-88	Drum Retaining
	Spring, Rear	94D164-91	Drum Retaining



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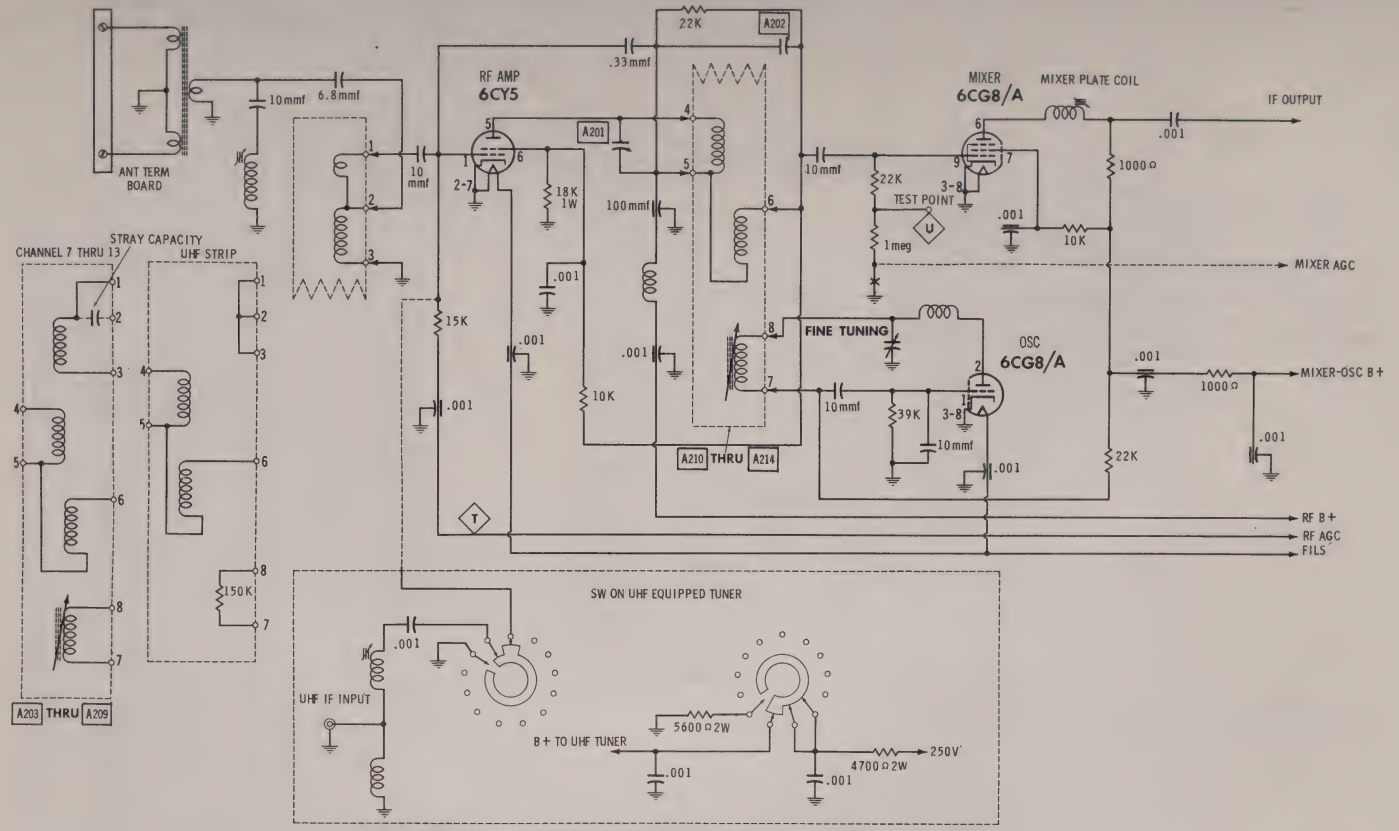
UHF TUNER 94E162—8



VHF OSCILLATOR ADJUSTMENT

TO TOUCH UP THE VHF OSCILLATOR, REMOVE VHF CHANNEL SELECTOR KNOB. THE ADJUSTMENTS (ONE SLUG FOR EACH CHANNEL) ARE ACCESSIBLE THRU A HOLE IN THE CHANNEL INDICATOR DISC AND GUIDE FUNNEL. (IT MAY BE NECESSARY TO ROTATE FINE TUNING TILL GUIDE FUNNEL IS VISIBLE THRU THE HOLE). SEE PAGE 15 FOR COMPLETE ALIGNMENT INSTRUCTIONS.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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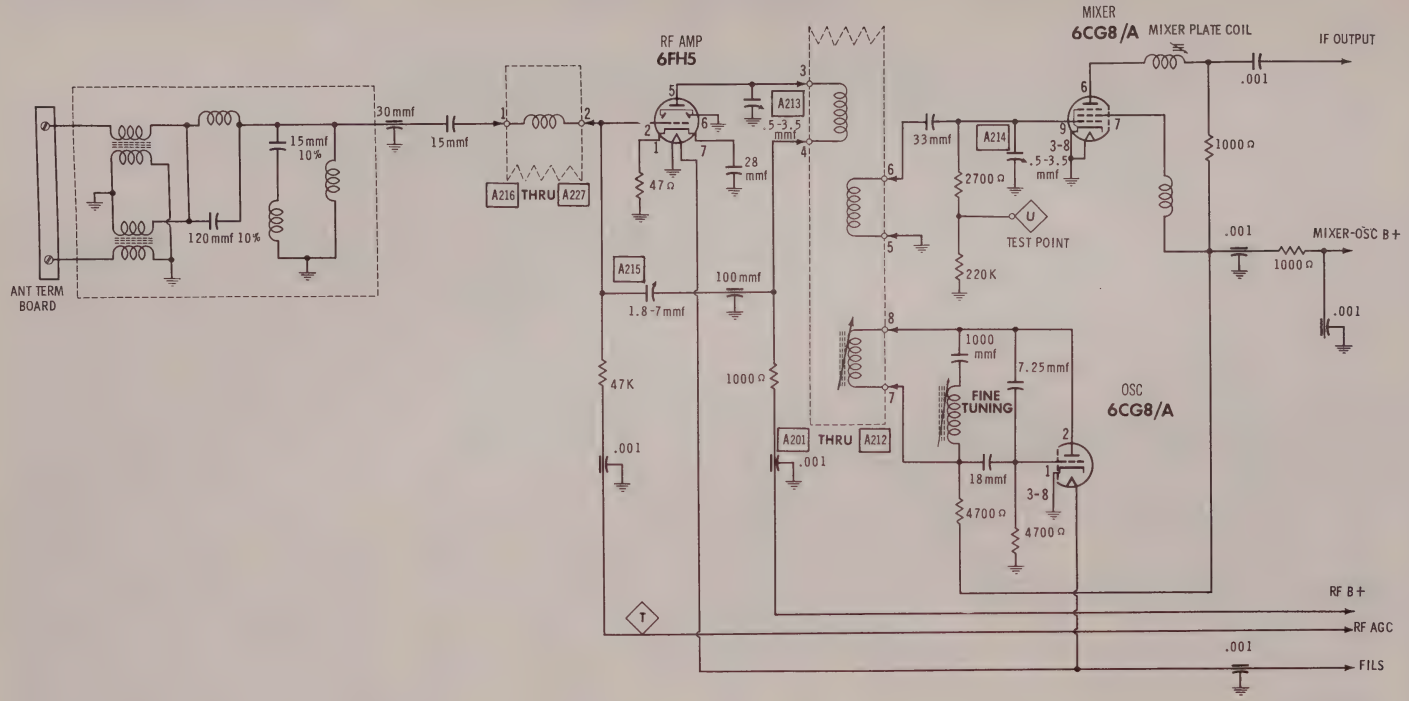
VHF TUNER 94E188-7
VHF TUNER WITH UHF PROVISIONS 94E188-8



VHF OSCILLATOR ADJUSTMENT

TO TOUCH UP THE VHF OSCILLATOR, REMOVE VHF CHANNEL SELECTOR KNOB. THE ADJUSTMENTS (ONE SLUG FOR EACH CHANNEL) ARE ACCESSIBLE THRU A HOLE IN THE CHANNEL INDICATOR DISC AND GUIDE FUNNEL. (IT MAY BE NECESSARY TO ROTATE FINE TUNING TILL GUIDE FUNNEL IS VISIBLE THRU THE HOLE).
SEE PAGE 10 FOR COMPLETE ALIGNMENT INSTRUCTIONS.

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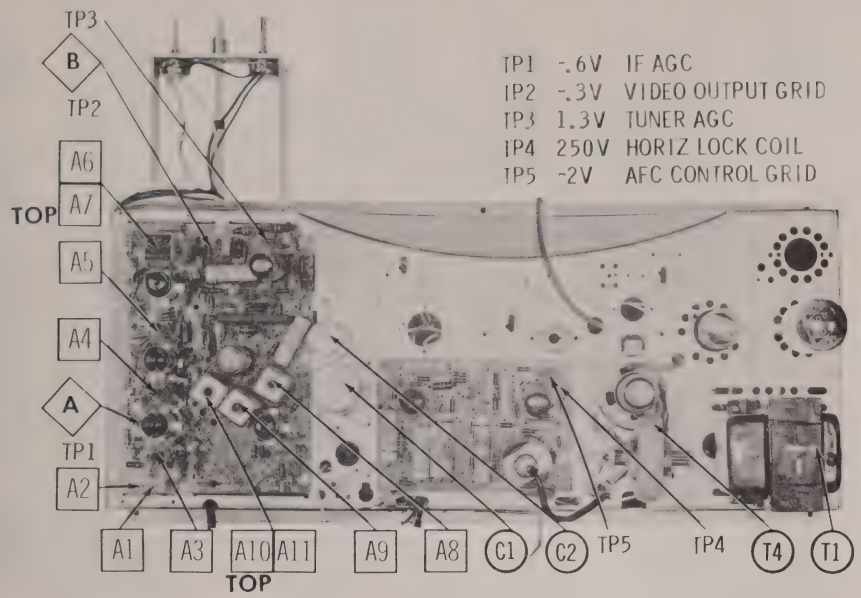
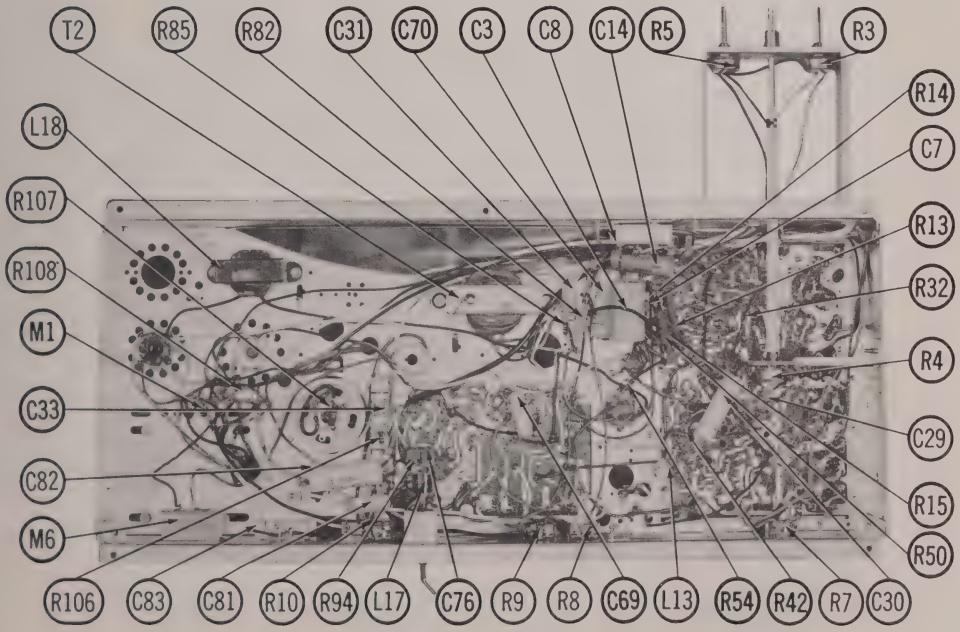
VHF TUNER 94E184-14



CHASSIS - TOP VIEW



CHASSIS - BOTTOM VIEW

RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	47Ω	FIL	FIL	▲538Ω	▲538Ω	0Ω		
V2	6BZ6	120K	140K	FIL	FIL	†520Ω	†520Ω	140K		
V3	6CB6A	.1Ω	150Ω	FIL	FIL	▬470Ω	▬470Ω	0Ω		
V4	6AW8A	0Ω	100K	▬40K	FIL	FIL	0Ω	3300Ω	▬15K	†5000Ω
V5	6BU8	▬0Ω	†8200Ω	2meg	FIL	FIL	●35K	†680K	†47K	†12meg
V6	6DT6	16Ω	680Ω	FIL	FIL	†385K	▬8200Ω	560K		
V7	12AX7A	†470K	3.3meg	1500Ω	FIL	FIL	†470K	3.3meg	1500Ω	FIL
V8	EL86	NC	450K	¶	FIL	FIL	NC	†400Ω ▬†180Ω	NC	†270Ω ▬†50Ω
V9	EL86	NC	470K	120Ω	FIL	FIL	NC	■▬120Ω	NC	■▬0Ω
V10	6DE7	†705Ω	NC	1.5meg	FIL	FIL	●†5.5meg	820K	● 270K	● 1000Ω
V11	6CG7	†10K	2.1meg	1100Ω	FIL	FIL	†82K	● 40K	1100Ω	0Ω
V12	6DQ6A	NC	FIL	NC	†18K	1meg	NC	FIL	0Ω	TOP CAP †14Ω
V13	6AX4GTB	NC	NC	600K	NC	†50Ω	NC	FIL	FIL	
V14	1G3GT 1B3GT	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP †534Ω
V15	5U4GB	NC	¶ 20K	NC	34Ω	NC	38Ω	NC	¶ 20K	
V16	23AHP4	FIL	39K	Pin 6 270K	Pin 10 †3meg	Pin 11 ●100K	Pin 12 FIL			
V201	6ER5	47Ω	2.3meg	FIL	FIL	†9200Ω	0Ω	47Ω		
V202	6CG8A	4700Ω	▬5700Ω	0Ω	FIL	FIL	▬2000Ω	▬1000Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

ALL MEASUREMENTS MADE IN "TV" POSITION UNLESS OTHERWISE DESIGNATED.

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.

● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.

▲ MEASURED FROM PIN 2 OF V2.

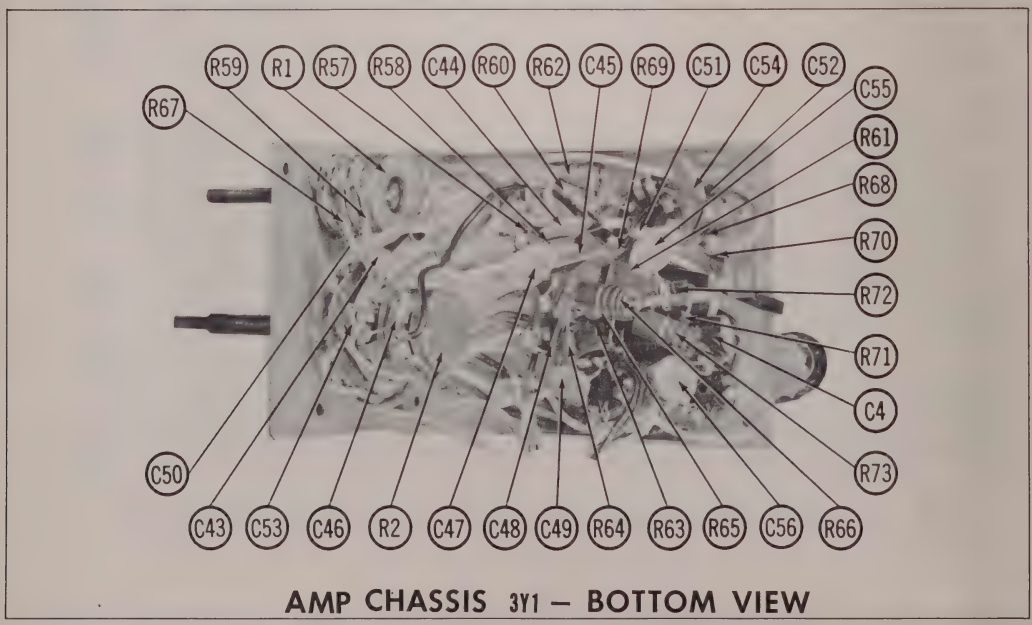
† MEASURED FROM PIN 8 OF V15.

✝ MEASURED FROM PIN 3 OF V13.

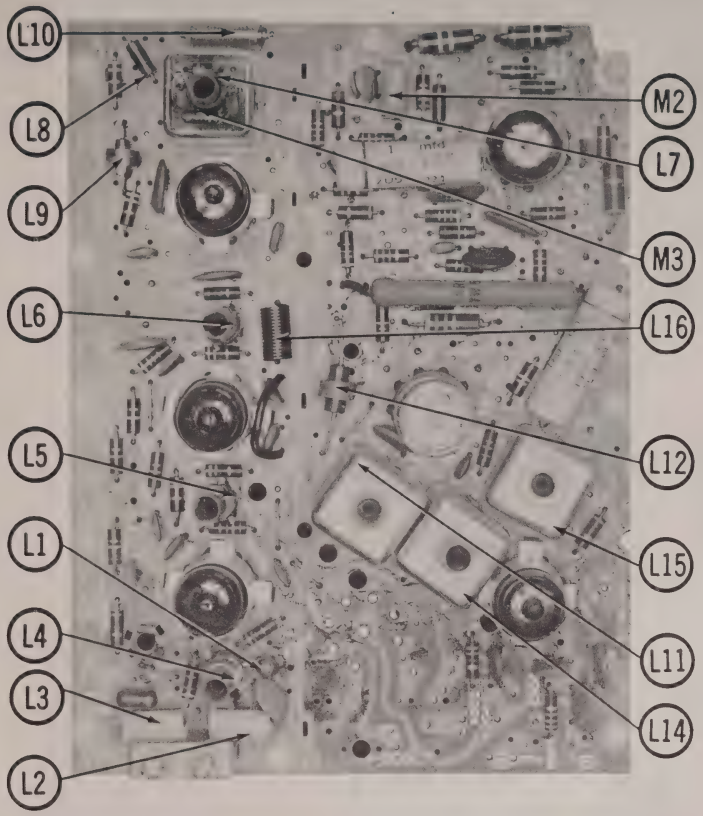
■ MEASURED IN "STEREO PHONO" POSITION.

▬ MEASURED FROM PIN 1 OF STEREO POWER SOCKET.

NC NO CONNECTION



AMP CHASSIS 3Y1 — BOTTOM VIEW



PRINTED BOARD - INDUCTOR, MISC. IDENT.

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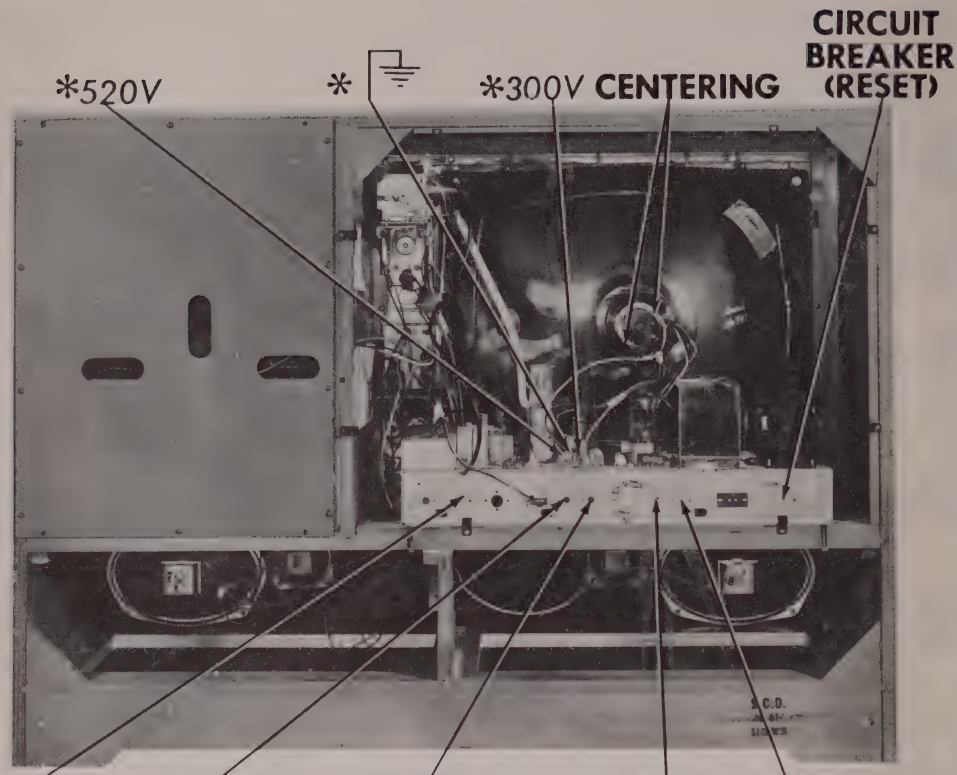
ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

HORIZ. - VERT. SWEEP PRINTED BOARD



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Adjust the Brightness and Contrast Controls for a normal picture.

Short out the AFC voltage by connecting a clip lead from TP-5 to chassis. Connect a . 22mfd, 400 volt capacitor from TP-4 to chassis.

Adjust Horizontal Range to the point where the picture is almost stable horizontally.

Remove the capacitor from TP-4 and adjust the Horizontal Lock to the point where the picture is almost stable horizontally.

Remove the clip lead from TP-5 and chassis. Adjust the Horizontal Lock until the picture is synchronized horizontally.

DISASSEMBLY INSTRUCTIONS

CHASSIS-PICTURE TUBE ASSEMBLY REMOVAL

1. Remove rear cover.
2. Disconnect speaker plug and antenna (also phono plugs and pilot lamp plug on some models).
3. Remove 3 chassis bolts.
4. Remove 4 screws (inside cabinet) holding front escutcheon to cabinet.
5. Remove chassis, picture tube, and escutcheon assembly out front.

PICTURE TUBE REMOVAL

It is necessary to remove Chassis and Picture Tube Assembly for picture tube removal.

PHOTOFACT® Folder with CIRCUITRACE®

TRAV-LER MODELS 19P6040, 19T6044 (Ch. 1160-140)

IMPORTANT FILING NOTICE

The TV Folder for this envelope will be found among the first folders in this complete Set of folders.

Merely insert the corresponding folder on this model in this envelope to retain proper filing and indexing order.

TRAV-LER MODELS 19P6040, 19T6044 (Ch. 1160-140)

MODEL 19P6040

TRAV-LER MODELS 19P6040, 19T6044 (Ch. 1160-140)

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TRAV-LER MODELS 19P6040, 19T6044 (Ch. 1160-140)

TRAV-LER MODELS 19P6040, 19T6044 (Ch. 1160-140)

MODEL 19P6040

TRADE NAME	Trav-Ler, Models 19P6040, 19T6044 (Chassis 1160-140)
SUPPLIER	Trav-Ler Radio & Television Corp., 571 West Jackson Blvd., Chicago 6, Illinois
TYPE SET	Television Receiver
TUBES	VHF - Seventeen
POWER SUPPLY	110-120 Volts AC, 60 Cycle RATING 180 Watts, 1.6 Amp. @ 117 Volts AC
TUNING RANGE	Channels 2 thru 13 VHF, Video IF 45.75MC, Sound IF 41.25MC (Intercarrier)

TRAV-LER MODELS 19P6040, 19T6044 (Ch. 1160-140)

SERVICING IN THE FIELD

SAFETY GLASS REMOVAL

It is necessary to remove the chassis and picture tube for safety glass cleaning. (See "Disassembly Instructions", Page 16.

FUSE

A 3/4A S/B fuse is used for LV power supply protection. (For location, see "Tube Placement Chart".)

A fuse wire is used for filament protection. (For location, see M2 in photo "Lower Chassis - Front View".)

TUNER OSCILLATOR ADJUSTMENT

To touch up VHF Oscillator remove brass insert plug in rear cover.

AGC

The AGC may be varied by means of an AGC Control. (For location, see "Tube Placement Chart".)

HORIZONTAL OSCILLATOR FIELD ADJUSTMENT

The Horizontal Frequency Slug is used for the Horizontal Hold. (For location, see "Tube Placement Chart".)

CENTERING

Centering is accomplished by 2 magnetic rings, located behind the yoke, on the neck of the picture tube.

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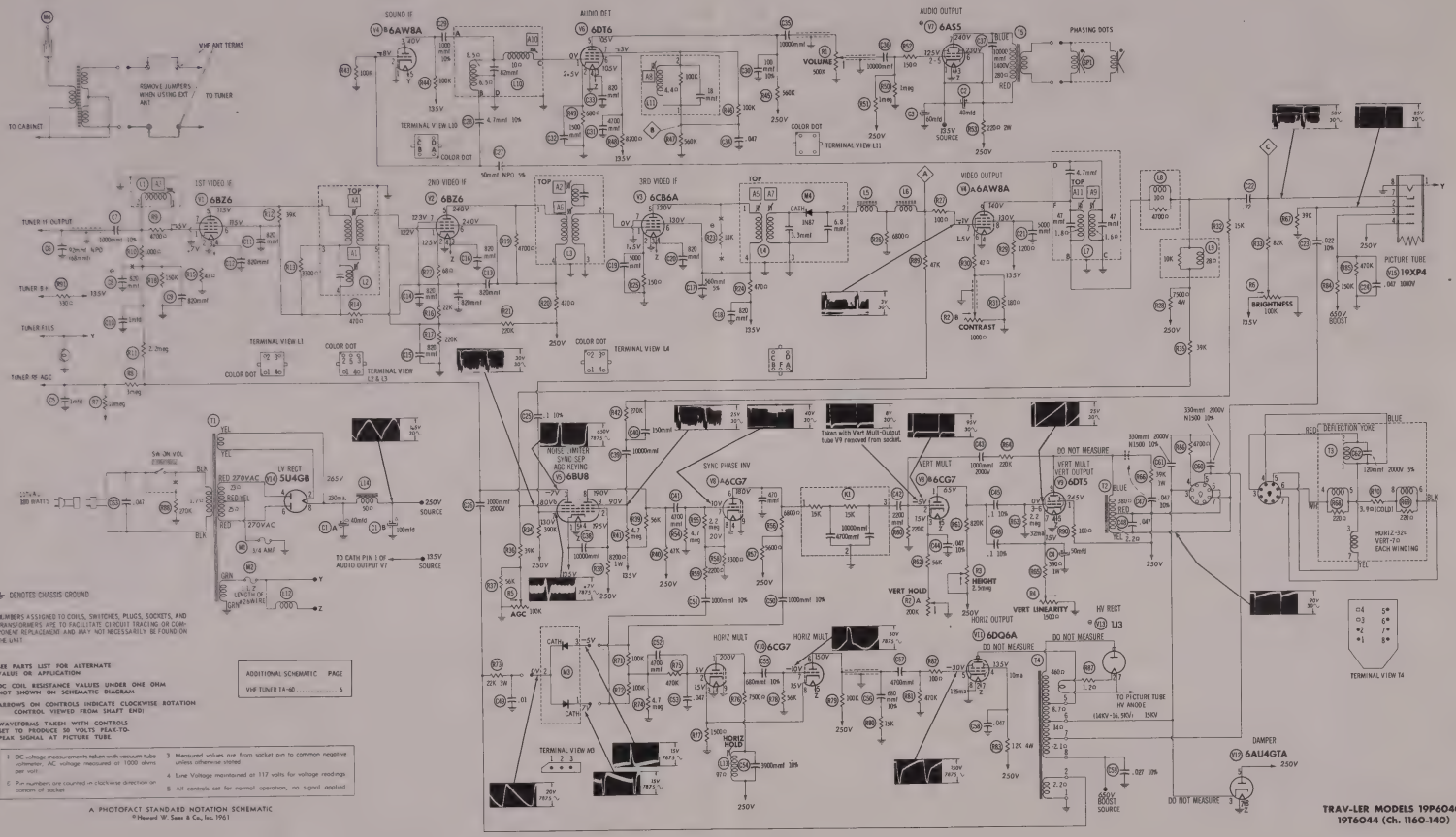
KA523R

SET 542 FOLDER 2


SOUND IF
AUDIO DET
AUDIO OUTPUT
PHASING DOTS
VHF ANT TERMS
REMOVE JUMPERS WHEN USING EXT ANT
TO TUNER
TO CABINET
VOLUME 500K
TERMINAL VIEW L10
TERMINAL VIEW L11
COLOR DOT
1ST VIDEO IF
2ND VIDEO IF
3RD VIDEO IF
VIDEO OUTPUT
TUNER IF OUTPUT
TUNER B+
TUNER FILS
TUNER RF AGC
TERMINAL VIEW L1
TERMINAL VIEW L2 & L3
TERMINAL VIEW L4
CONTRAST 1000Ω
BRIGHTNESS 100K
PICTURE TUBE
19XP4
DEFLECTION YOKE
HORIZ-320
VERT-70
EACH WINDING
SYNC SEP AGC KEYING
SYNC PHASE INV
VERT MULT
VERT MULT VERT OUTPUT
DO NOT MEASURE
HEIGHT
VERT HOLD
VERT LINEARITY
HORIZ OUTPUT
HV RECT
TO PICTURE TUBE HV ANODE
(14KV-16.5KV= 15KV)
HORIZ MULT
HORIZ HOLD
DAMPER
650V BOOST SOURCE
TERMINAL VIEW T4
TERMINAL VIEW M3
SW ON VOL
LV RECT
250V SOURCE
13.5V SOURCE
TO CATH PIN 1 OF AUDIO OUTPUT V1
AGC
DENOTES CHASSIS GROUND
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT
SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION
DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION CONTROL VIEWED FROM SHAFT END
WAVEFORMS TAKEN WITH CONTROLS SET TO PRODUCE 50 VOLTS PEAK-TO-PEAK SIGNAL AT PICTURE TUBE.
ADDITIONAL SCHEMATIC PAGE
VHF TUNER TA-60 6
1 DC voltage measurements taken with vacuum tube voltmeter. AC voltage measured at 1000 ohms per volt.
2 Pin numbers are counted in clockwise direction on bottom of socket
3 Measured values are from socket pin to common negative unless otherwise stated
4 Line Voltage maintained at 117 volts for voltage readings
5 All controls set for normal operation, no signal applied
A PHOTOFACT STANDARD NOTATION SCHEMATIC
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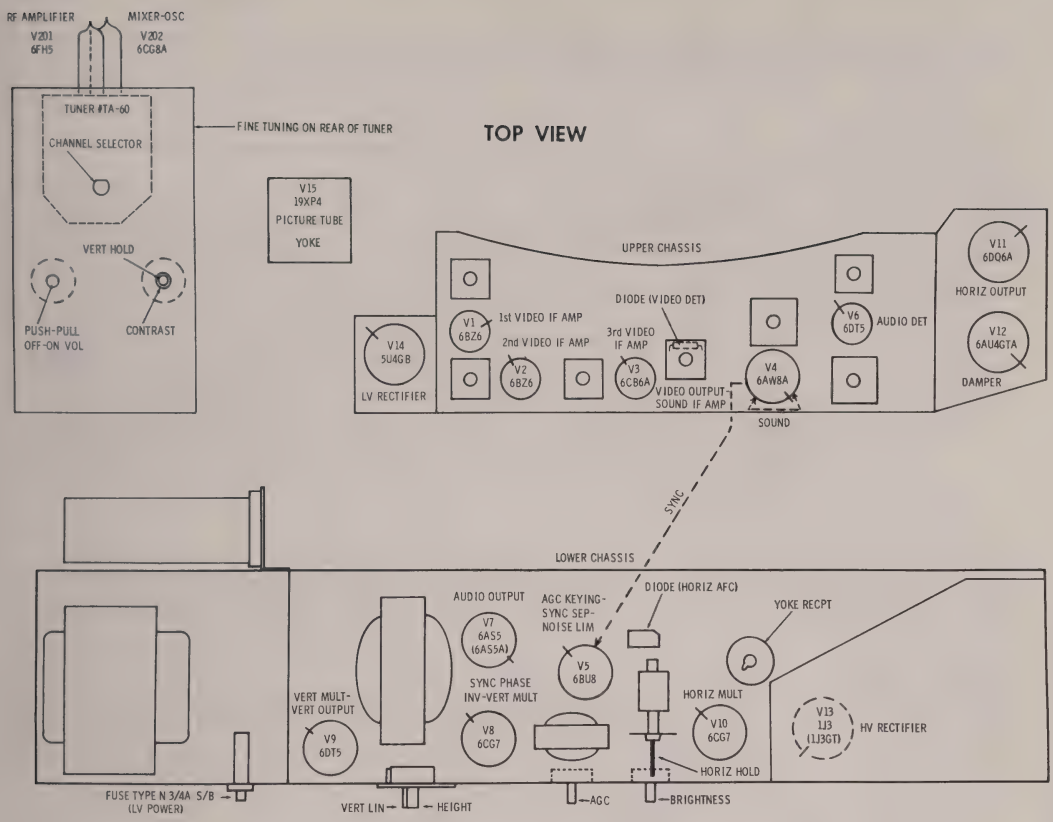
TRAV-LER MODELS 19P6040, 19T6044 (Ch. 1160-140)

TUBE PLACEMENT CHART



TUBE FAILURE CHECK CHART

The following chart lists tubes whose failures are most likely to produce indicated symptoms. Refer to tube placement chart for location and type of tube.

POWER SUPPLY FAILURE
No raster, no sound Fuse (LV Power), V15, Fuse (Fil.), V7

SWEEP FAILURE
No raster, has sound V10, V11, V12, V13, V15
No vertical deflection V8, V9
Poor vert. linearity or foldover V8, V9
Poor horiz. linearity or foldover V10, V11, V12
Narrow picture V10, V11, V12, V14
Vert. off freq. V8, V9
Horiz. off freq. Diode (Horiz. AFC), V10

LOSS OF PICTURE OR SOUND
No pic, no sound, has raster V1, V2, V3, Diode (Video Det.), V4
No pic, no sound, has snow V201, V202, V1
No pic, has sound, has raster V4, V15
Has pic, no sound V4, V6, V7
Overloaded picture V5

SYNC FAILURE
No vert. sync V5, V8
No horiz. sync V5, V8
No vert. or horiz. sync V5, V8

ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested Alignment Tools: GENERAL CEMENT #8282, 8606, 8606L, 9295
WALSCO #2526, 2543, 2544, 2545

VIDEO IF ALIGNMENT

Set Contrast fully clockwise.
Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Use only enough sweep generator output to provide a usable pattern on scope.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Direct	Place a thin insulated metal strip between the Mixer-Osc. tube (V202), and tube shield. Connect the high side of sweep generator to the metal strip. Low side to chassis.	44MC (10MC Swp)	41.25MC	Any non-interfering channel	Vert. Amp. thru 47K to point (A). Low side to chassis. (Across Video Det. load)	A1	Adjust to place marker in 41.25MC trap notch. (See Fig. 1).
2.	"	"	"	47.25MC	"	"	A2	Adjust to place marker in other trap notch.
3.	"	"	"	42.75MC 45.75MC	"	"	Mixer Plate Coil & A3 thru A7	Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Adjust Mixer Plate Coil and A3 for maximum gain. A4 and A5 to shape high frequency side of response curve. A6 and A7 is adjusted to shape low frequency side.

SOUND IF ALIGNMENT

Connect an output meter across speaker voice coil.
Connect the DC probe of the VTVM to point (B). Common to chassis. Tune in a strong air signal and adjust A8 for maximum output. If two peaks occur during this adjustment, use the one resulting in the highest reading on the VTVM.
Reduce the signal strength by disconnecting the antenna. Adjust A9 and A10 for maximum undistorted sound. Further reduce the signal by moving the antenna lead further away. Retouch A9 and A10 for maximum undistorted sound. Repeat entire procedure if necessary.

4.5MC TRAP ALIGNMENT

	DUMMY ANTENNA	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	CHANNEL	CONNECT VTVM	ADJUST	REMARKS
4.	.05mfd	High side to point (A). Low side to chassis.	4.5MC (Unmod)	Any non-interfering channel	AC probe to point (C). Common to chassis. (Use 0-10VAC scale).	All	Adjust for MINIMUM deflection.

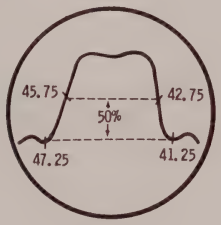
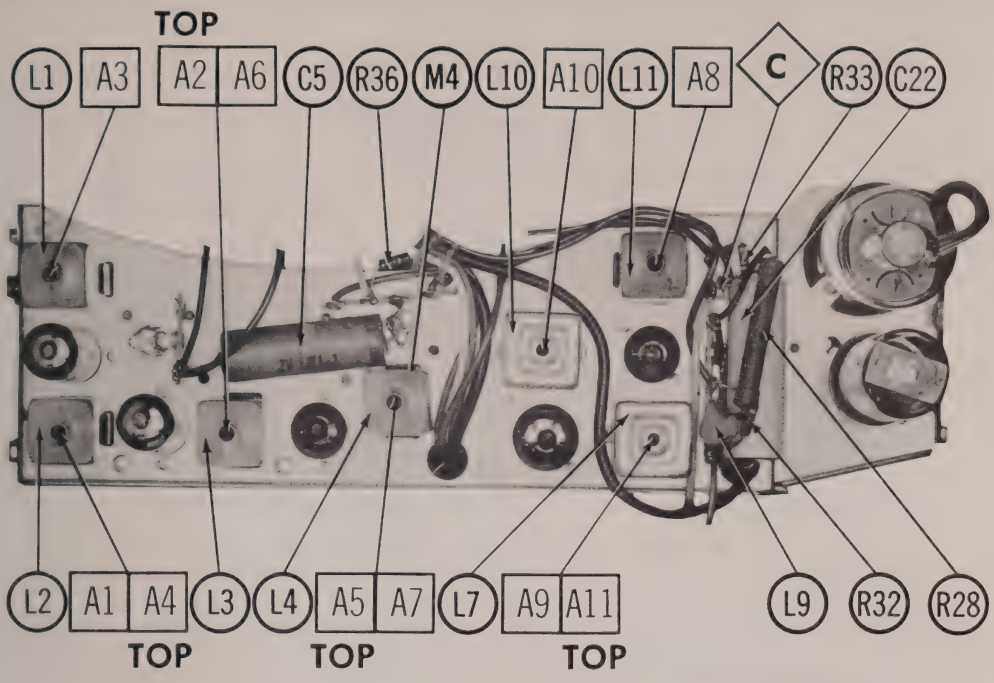
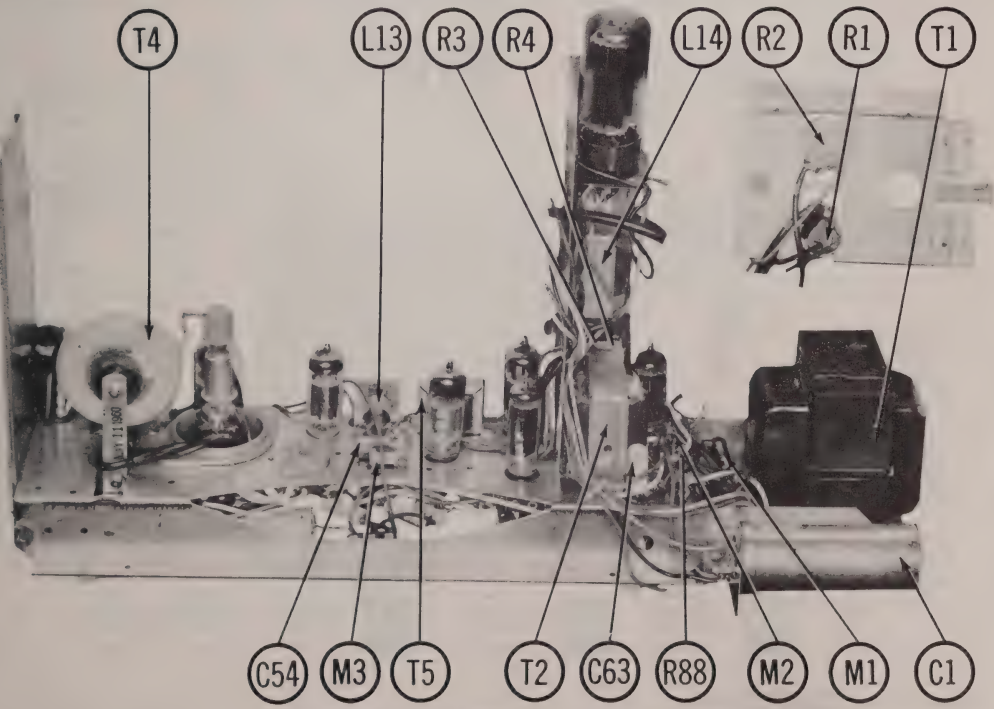


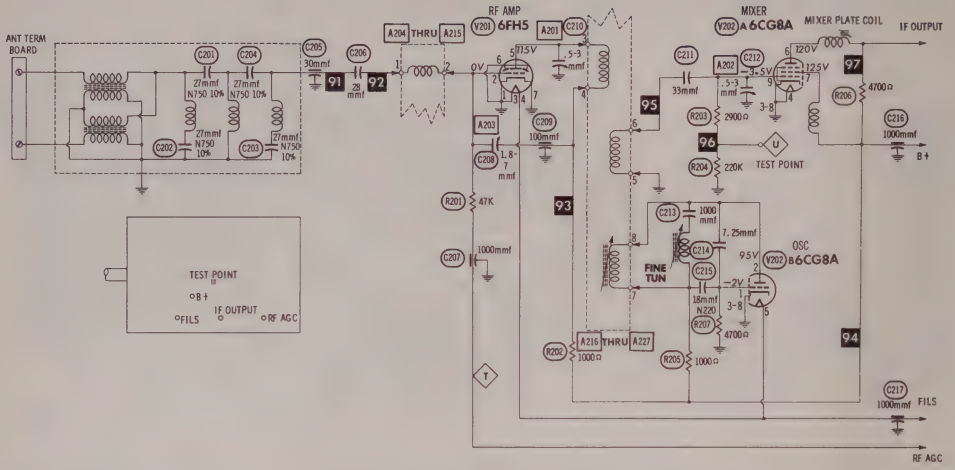
FIG 1



UPPER CHASSIS - TOP VIEW



LOWER CHASSIS - FRONT VIEW



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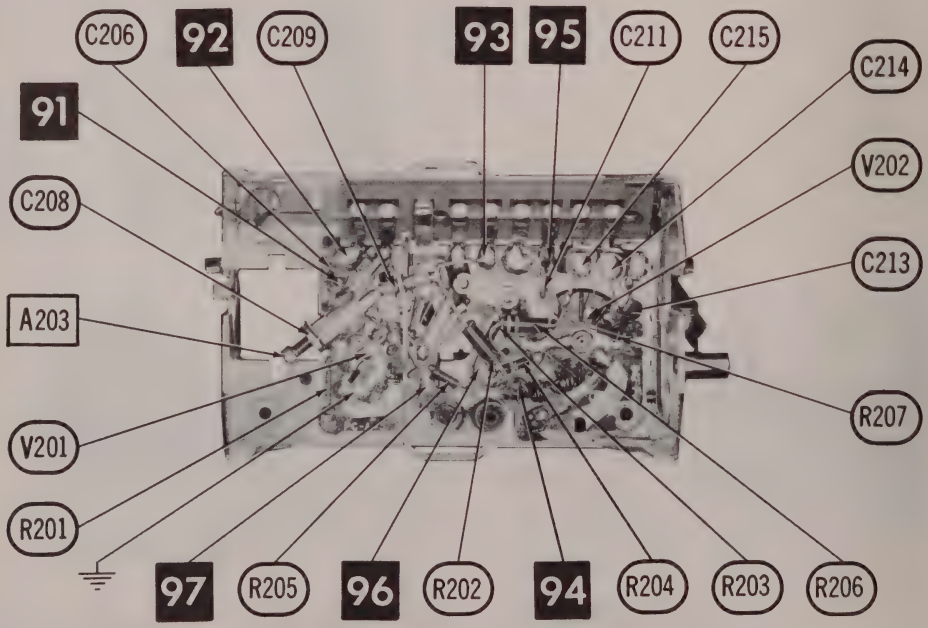
TUNER TA-60



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ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED

TUNER TA-60 - BOTTOM VIEW

TUNER ALIGNMENT INSTRUCTIONS

PRE-ALIGNMENT INSTRUCTIONS

The High Voltage lead should be securely taped and kept away from the chassis.
Allow a 20 minute warm-up period for the receiver and test equipment.
Suggested alignment tools: A201, A202, A203.....GENERAL CEMENT #5000, 5003, 5014, 5015, 5016, 8276, 8290
WALSCO #2512. 2515, 2522, 2523, 2525, 2537
A204 thru A215..... None Required
A216 thru A227..... GENERAL CEMENT #8282
WALSCO #2526

VHF RF AND MIXER ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Connect the negative lead of a 2.5 volt bias supply to point ⏀. Positive to chassis.
Use only enough sweep generator output to provide a usable pattern on scope.
Use 10MC unless otherwise noted.
Coils not containing adjustable cores are adjusted by expanding or compressing coil turns.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
1.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	195MC	193.25MC 197.75MC	10	Vert. Amp. thru 10K to point ⏀. Low side to chassis.	A201 A202 A203	Adjust A201 and A202 for maximum amplitude and symmetry with markers as shown in Fig. 201. Increase bias for MINIMUM amplitude of response curve. Without changing the bias adjust A203 to obtain MINIMUM response on the scope.
2.	"	"	213MC	211.25MC 215.75MC	13	"	A204	Adjust for maximum amplitude of response similar to Fig. 201. Adjust by expanding or compressing coil turns.
			207MC	205.25MC 209.75MC	12		A205	
			201MC	199.25MC 203.75MC	11		A206	
			195MC	193.25MC 197.75MC	10		A207	
			189MC	187.25MC 191.75MC	9		A208	
			183MC	181.25MC 185.75MC	8		A209	
			177MC	175.25MC 179.75MC	7		A210	
			85MC	83.25MC 87.75MC	6		A211	
			79MC	77.25MC 81.75MC	5		A212	
			69MC	67.25MC 71.75MC	4		A213	
			63MC	61.25MC 65.75MC	3		A214	
			57MC	55.25MC 59.75MC	2		A215	

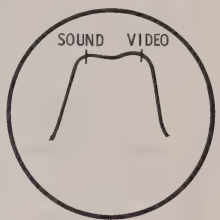


FIG.201

VHF OSCILLATOR ALIGNMENT

Connect the synchronized sweep voltage from the sweep generator to the horizontal input of the oscilloscope for horizontal deflection.
The generator output lead should be terminated with its characteristic impedance, usually 50 ohms.
Set the Fine Tuning to the center of its range.
Use only enough sweep generator output to provide a usable pattern on scope.
Connect variable bias to IF AGC line. Adjust bias to obtain response curve which shows no indication of overloading.
Use 10MC sweep unless otherwise noted.

	DUMMY ANTENNA	SWEEP GENERATOR COUPLING	SWEEP GENERATOR FREQUENCY	MARKER GENERATOR FREQUENCY	CHANNEL	CONNECT SCOPE	ADJUST	REMARKS
3.	Two 120Ω Carbon Resistors	Across antenna terminals with 120Ω in each lead.	213MC	211.25MC 215.75MC	13	Vert. Amp. thru 47K across Video Det. load.	A216	Adjust to place sound marker in trap notch as in Fig. 202. Video marker should fall at 50%.
			207MC	205.25MC 209.75MC	12		A217	
			201MC	199.25MC 203.75MC	11		A218	
			195MC	193.25MC 197.75MC	10		A219	
			189MC	187.25MC 191.75MC	9		A220	
			183MC	181.25MC 185.75MC	8		A221	
			177MC	175.25MC 179.75MC	7		A222	
			85MC	83.25MC 87.75MC	6		A223	
			79MC	77.25MC 81.75MC	5		A224	
			69MC	67.25MC 71.75MC	4		A225	
			63MC	61.25MC 65.75MC	3		A226	
			57MC	55.25MC 59.75MC	2		A227	

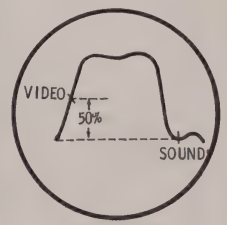


FIG.202

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No	GENERAL ELECTRIC — USE	GENERAL ELECTRIC — TYPE	RAYTHEON — USE	RAYTHEON — TYPE	SYLVANIA — USE	SYLVANIA — TYPE
V1	1st Video IF Amp.	6BZ6	V8	Sync Phase Inv.-		
V2	2nd Video IF Amp.	6BZ6		Vert. Mult.		6CG7
V3	3rd Video IF Amp.	6CB6A	V9	Vert. Mult. - Vert. Output		6DT6
V4	Video Output - Sound IF Amp.	6AW8A	V10	Horiz. Mult.		6CG7
			V11	Horiz. Output		6DQ6A
V5	AGC Keying - Sync Sep. - Noise Limiter	6BU8	V12	Damper		6AU4GTA
			V13	HV Rectifier		1J3 (1J3GT) *
V8	Audio Detector	6DT6	V14	LV Rectifier		5U4GB
V7	Audio Output	6AB8 (6ASSA) *.				

* Alternate Value

PICTURE TUBE

ITEM No	REPLACEMENT DATA: TRAV-LER PART No.	GENERAL ELECTRIC PART No.	RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
V15	19XP4		19XP4 ①		19XP4 ②	① Aluminized ③ Silver Screen "85"

ELECTROLYTIC CAPACITORS

ITEM No	RATING: CAP	RATING: VOLT	REPLACEMENT DATA: TRAV-LER PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	40	350	EC-115	AFH2-54-25	BO483	FP247	TMD-2500	TVL-2780	
B	100	350							
C2	40	300	EC-113	PRS590	BR4025	TC58	TD-40-350	TVA-1511	
C3	80	200	EC-131	PRS590	BR6025	TC68	TD-80-250	TVA-1513	
C4	50	50	EC-130	PRS350	BR5015	TC39	TD-50-50	TVA-1308	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING			REMARKS	REPLACEMENT DATA: AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	1mfd	100V			P288N-1.0		CUB3W1	1DP-5-105	GEM-21	2TM-M1
C6	82	NPO		† (88)	NPO-DI 100	TCS-5I	CN0G1C	CCTO-101	CNO-310	10TCC-T10
C7	1000		10%		DI-1000	DD-102	5RS1N	CCD-102	GP210	10TS-D10
C8	820			Note 1	DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C9	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C10	1mfd	100V			P288N-1.0		CUB3W1	1DP-5-105	GEM-21	2TM-M1
C11	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C12	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C13	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C14	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C15	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C16	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C17	560		5%				CM-19E-561J	MCJ347	MS-356	
C18	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C19	5000				BPD-006	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C21	5000				BPD-006	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C22	.22	400V			P488N-22		CUB4P22	4DP-5-224	GEM-4022	4TM-P22
C23	.022	600V	10%		V84C8822-10%		PM8822	6DP-2-223	GEM-1612	6TM-S22
C24	.047	1000V			P10S8N-047		CUB10S47	10DP-5-473	GEM-40147	10TM-S47
C25	.1	600V	10%		V84C6P1-10%		PM6P1	6DP-4-104	GEM-1001	6TM-P10
C26	1000	2000V			HVD-30-1000	DD30-102	HVB20I1	3CCD-102	2HV-210	BL-D10
C27	50	NPO	5%			DTZ-5G	CN0G1C		CNO-450	10TCC-Q50
C28	4.7		10%		NPO-5I 4.7	TCZ-4R7	C10V47C	CCTO-4R7	CNO-547	10TCC-V47
C29	1000		10%		DI-1000	DD-102	5RS1N	CCD-102	GP210	10TS-D10
C30	100		10%		DI-100	DD-101	LJ7I5	CCD-101	GP310	10TS-T10
C31	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C32	1500				BPD-0015	DD-152	BYA10D15	CCD-152	B-215	5HK-D15
C33	820				DI-820	DD-82I	BYA10T82	CCD-82I	B-382	10TS-T82
C34	.047	200V			P288N-047	DD-503	CUB2S47	4DP-3-473	GEM-4147	2TM-S47
C35	10000				BPD-01	DD-103	BYA10I	CCD-103	B-110	5HK-I10
C36	10000				BPD-01	DD-103	BYA10I	CCD-103	B-110	5HK-I10
C37	10000	1400V			DAC-2T	DD8-103	HVB25I	3DP-5-103	UAC-110	BL-I10
C38	10000				BPD-01	DD-103	BYA10I	CCD-103	B-110	5HK-I10
C39	10000				BPD-01	DD-103	BYA10I	CCD-103	B-110	5HK-I10
C40	150				DI-150	DD-151	LJ7I5	CCD-151	B-215	10TS-T15
C41	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C42	2200				BPD-0022	DD-222	BYA10D22	CCD-222	B-222	5HK-D22
C43	1000	2000V			HVD-30-1000	DD30-102	HVB20I1	3CCD-102	2HV-210	BL-D10
C44	.047	600V	10%		V84C6847-10%		PM6847	6DP-3-473	GEM-1615	6TM-S47
C45	.1	600V	10%		V84C6P1-10%		PM6P1	6DP-4-104	GEM-1001	6TM-P10
C46	.1	600V	10%		V84C6P1-10%		PM6P1	6DP-4-104	GEM-1001	6TM-P10
C47	.047	600V	10%		V84C6847-10%		PM6847	6DP-3-473	GEM-1615	6TM-S47
C48	.047	600V			P6S8N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C49	.01	600V			P6S8N-01	D6-103	CUB6I	6DP-2-103	GEM-61	6TM-I10
C50	1000		10%		DI-1000	DD-102	5RS1N	CCD-102	GP210	10TS-D10
C51	1000		10%		DI-1000	DD-102	5RS1N	CCD-102	GP210	10TS-D10
C52	4700				BPD-0047	DD-472	BYA10D47M	CCD-472	B-247	5HK-D47
C53	.047	600V			P6S8N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C54	3900		10%		1464-0039		1RS39	CM-20B-392K	MCJ462.5	MS-239
C55	680		10%		1469-00068		5RS68	CM-19B-681K	MCJ349	MS-368
C56	680		10%		1469-00068		5RS68	CM-19B-681K	MCJ349	MS-368
C57	4700				BPD-0047	DD-472	BYA10D47	CCD-472	B-247	5HK-D47
C58	.047	600V			P6S8N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47
C59	.027	1600V	10%	#PC-88C				16DP-5-303	GEM-1613	
C60	330	2000V	NI500 10%	#CC-119						
C61	330	2000V	NI500 10%	#CC-119						
C62	120	2000V	5%	#CC-118						
C63	.047	600V			P6S8N-047	DD-503	CUB6S47	6DP-3-473	GEM-6147	6TM-S47

Note 1. May not be used in some versions. † Alternate Value # Trav-Ler Part Number

CONTROLS

ITEM No	RATING: RESISTANCE	RATING: WATTS	REPLACEMENT DATA: TRAV-LER PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K	½	VC-120	B2L-50	C478-500K-Z	B13-133 *	PP65A	Volume
B	Shaft			Not Req.	K58-5	Not Req.	Not Req.	
C	Switch			Not Req.	Not Req.	SKT *	Not Req.	Push-Pull Off-On
R3A	300K	½	VC-32	F1-53		QJ-1531 *	UE4303	Vert. Hold
B	1000Ω	½		R2-5				Contrast
R3	2.5meg		VC-78	TT-53	B47-2.5meg-A	HLC3	RU-565	Height
R4A	1500Ω	½	VC-85A	TT-511	B47-1500-S	B11-109	PTA152L	Vert. Linearity
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R5A	100K	½	VC-84	TT-40	B47-100K-S	B11-128	PTA9L	AGC
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	
R6A	100K	½	VC-84	TT-40	B47-100K-S	B11-128	PTA9L	Brightness
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

† "CONCENTRIKIT" Equivalent: K-45 Kit with Base Elements and Shafts: B11-135, P17-031 (Panel) B17-105, R9-110 (Rear)

"TFA-LOC" Equivalent: FA3S1, RU1SR, OF1000, 1S437

* Factory assembled Part #PA13-133 (SKT).

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN TV PART No	REMARKS
RT	10meg			
R8	3.0meg			
R9	4700Ω			
R10	1000Ω			
R11	2.2meg			
R12	39K			
R13	3300Ω			
R14	470Ω			
R15	47Ω			
R16	22K			
R17	220K			
R18	150K			
R19	4700Ω			
R20	470Ω			
R21	220K			
R22	68Ω			
R23	18K *			
R24	470Ω			
R25	150Ω			
R26	68000Ω			
R27	100Ω			#R-284
R28	8200Ω 4W	PW5-7500Ω	4G-7500Ω	#R-287
R29	1200Ω			
R30	47Ω			
R31	180Ω			
R32	15K			
R33	82K			
R34	390K			
R35	39K			
R36	39K			
R37	56K			
R38	8200Ω 1W			
R39	56K			
R40	47K			
R41	4.7meg			
R42	270K			
R43	100K			
R44	100K			
R45	560K			
R46	100K			
R47	560K			
R48	8200Ω			
R49	680Ω			

ITEM No.	RATING	REPLACEMENT DATA: IRC PART No	WORKMAN TV PART No	REMARKS
R50	1meg			
R51	1meg			
R52	150Ω			
R53	220Ω 2W			
R54	4.7meg			
R55	2.2meg			
R56	6800Ω			
R57	560Ω			
R58	3300Ω			
R59	2200Ω			
R60	220K			
R61	820K			
R62	56K			
R63	2.2meg			
R64	220K			
R65	390Ω 1W			
R66	39K 1W			
R67	39K			
R68	220Ω			
R69	220Ω			
R70	3.9Ω (Cold)			#R-284
R71	100K			
R72	100K			
R73	22K 2W	PW5-22K	3G-22K	#R-276
R74	4.7meg			
R75	470K			
R76	7500Ω			
R77	1500Ω			
R78	56K			
R79	100K			
R80	15K			
R81	470K			
R82	100Ω			
R83	12K 4W	PW5-12K	5G-12K	#R-275
R84	150K			
R85	470K			
R86	4700Ω			
R87	1.2Ω			
R88	270K			
R89	47K			
R90	100Ω			
R91	330Ω			

* May not be used in some versions. # Trav-Ler Part Number

COMPONENT COMBINATIONS

ITEM No	USE	DESCRIPTION	TRAV-LER PART No.	REPLACEMENT DATA
K1	Vert. Integrator	4700mmf, 10000mmf, 15K, 15K	CC-120	Centralab PC-392

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	1st Video IF	L-150					
L2A	2nd Video IF	L-153					
B	41.25MC Trap						
L2A	3rd Video IF	L-165	TV-128	6233	RTC-8561	T210	
B	47.25MC Trap						①Includes Complete Assy.
L4	4th Video IF	L-152 ①					
L5	RF Choke (Uhh)	L-160	BC-566	4612	RTC-8522	T860	
L6	RF Choke (27uh)	L-156	TV-192	4515	RTC-8525	T863	
L7A	4.5MC Trap	L-154		1462 1FT	RTC-9056	T253	
B	1st Sound IF						
L8	Peaking	L-161 ②	"	"	"	"	②Wound on 4700Ω Resistor
L9	Peaking	L-163 ③					③Wound on 10K Resistor
L10	2nd Sound IF	L-167					
L11	Quadrature	L-110A ④	TV-154 *	1481 *	RTC-8606 *	T248 *	①Includes Cap. & Res.
L12	Fil. Choke (1.5uh)	L-164	BC-562	4694	RTC-8516	T256	*Shunt with 100K Resistor

COILS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	Merit PART No.	Miller PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	Workman TV PART No.
LJ3	Horiz. Stabilizer	L-186	TV-163	6210	RCL10	RTC-8623	HS-5	WLC-25	T103

FILTER CHOKE

ITEM No.	RATINGS: CURRENT (Measured)	RATINGS: DC RES.	RATINGS: INDUCTANCE (0 CURRENT 1000 Cy.)	REPLACEMENT DATA: TRAV-LER PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No	NOTES
L14	.230A	50Ω	1 Hy.	FC-18A	C-2996	C-2343	26C44	C-34X	

TRANSFORMER (POWER)

ITEM No.	RATING: PRI.	RATING: SEC. 1	RATING: SEC. 2	REPLACEMENT DATA: TRAV-LER PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	117V ② 1.6A	540V CT ② 230A DC	5V ② 3A	TR-52B	P-2882	P-8355	26R47 ①	R-75BA	①Use universal mounting bracket.
	SEC. 3	SEC. 4	SEC. 5						
	6.3V ② 9A								

TRANSFORMERS (SWEEP CIRCUITS)

ITEM No.	USE	REPLACEMENT DATA: TRAV-LER PART No.	Merit PART No.	Rogers PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T2	Vert. Output	TR-50B		PCM-2017 ①②③	DY-27A ①③	26R24 Y-52 ①	A-140X Y-60-1 ①	
T3	Yoke (Horiz. 15.7MC)	L-177						
	Yoke (Vert. 14MC)							
T4	Horiz. Output	TR-51A	HVO-152 *	EFR-172 *	HO-304 *	FLY-137 *	D-151R *	

① Use original yoke plug; connect same as original.
② Remove yoke damping network. Use original.
③ Requires new rear cover and centering device.

*HORIZONTAL OUTPUT TRANSFORMER CONNECTION DATA

ORIGINAL TERMINAL CONNECTIONS	Merit Replacement Connections	Rogers Replacement Connections	Stancor Replacement Connections	Thordarson Replacement Connections	Triad Replacement Connections
5	5	5	5	5	5 & 4
6	6	4	6	6	6
7	7	2	7	7	7
8	8	1	8	8	8
2	2	7	2	1	2
1	1	8	1	2	1

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE: PRI.	IMPEDANCE: SEC.	REPLACEMENT DATA: TRAV-LER PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T5	4700Ω	3-4Ω	AT-50	A-3026	A-3877	24S48	S-41Z	

SPEAKER

ITEM No.	TYPE: SIZE	TYPE: FIELD	TYPE: V. C. IMP.	REPLACEMENT DATA: TRAV-LER PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	SPK-49	4A07	Two used in some versions.

TRAV-LER MODELS 19P6040, 19T6044 (Ch. T1L0-140)

FOLDER 2

PARTS LIST AND DESCRIPTIONS (Continued)

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			TRAV-LER PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	N	3/4A 125V S/B	F-13	F-14	333.750 (N 3/4A 125V S/B)	346010	N 3/4	HN 1/2 to 3/4
M2	1½" length of #26 wire							

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		TRAV-LER PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M3		SR-15 * †	6GD1 *			* Dual Selenium Diode, Series Connected Type † Horiz. AFC ♦ Video Detector
M4	1N87	SC-23 ♦		1N87	1N87	

MISCELLANEOUS

ITEM No.	PART NAME	TRAV-LER PART No.	NOTES
M5	Tuner	TA-60	VHF, STANDARD COIL REPLACEMENT #GG-4220A
M6	Antenna	L-148	JFD REPLACEMENT Type #TA385

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Lens	MP-191	Model 19P6040
Knob, Channel Select	K-441	Model 19P6040
Knob, Fine Tune	K-438	Model 19P6040
Knob, Volume	K-437	Model 19P6040
Knob, Contrast	K-439	Model 19P6040
Knob, Vert. Hold	K-440	Model 19P6040
Dial, Channel Indicator	DS-45	Model 19P6040
Cabinet Front	MP-192	Model 19P6040
Cabinet Back	MP-190	Model 19P6040
Handle	CH-134	Model 19P6040

WIRING DATA

High Voltage Lead	Use BELDEN No. 8889
Shielded Hook-up Wire	Use BELDEN No. 8885 (Single Conductor) 8738 (Two Conductor)
General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord (Interlock Type)	Use BELDEN No. 8874
300Ω Tuner Input Lead	Use BELDEN No. 8225
300Ω Antenna Lead-in	Use BELDEN No. 8230 or 8275
Antenna Rotor Cable	Use BELDEN No. 8464 (Flat) or 8484 (Round) - 4 Conductor 8485 (Round) - 5 Conductor 8488 (Round) - 8 Conductor

TUNER PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC •			• RAYTHEON •		• SYLVANIA •
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V201	RF Amp.	6FH5	V202	Mixer-Osc.	6CG8A

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

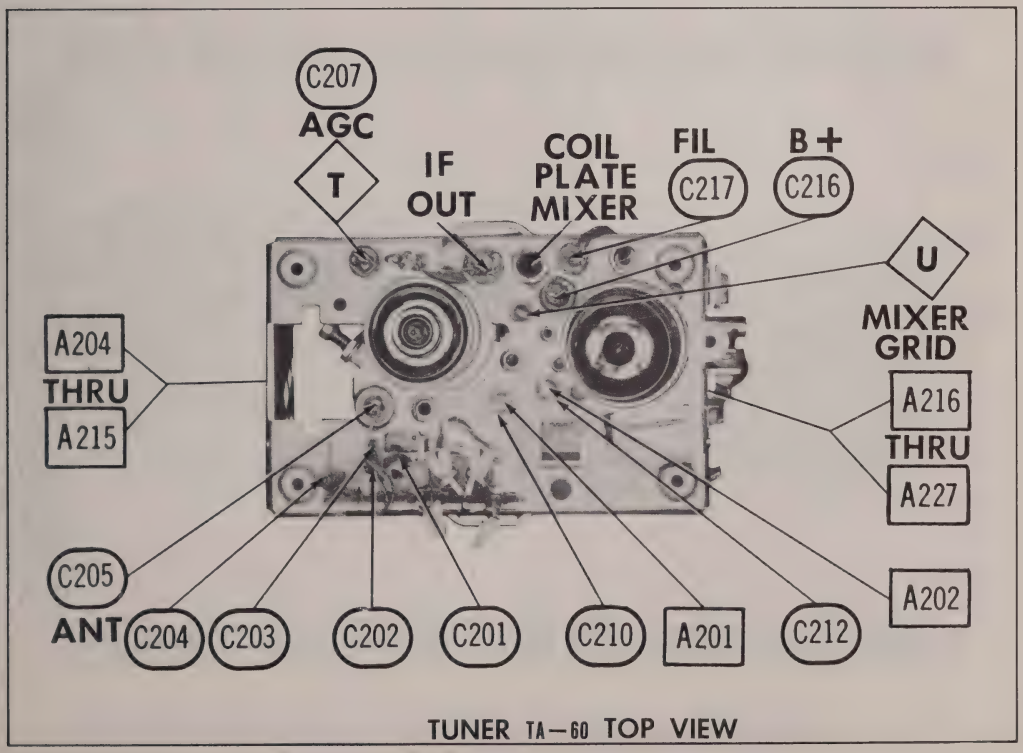
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C201	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C202	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C203	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C204	27 N750 10%		N750-DI 25	TCN-27	C10Q27U	CCTN-270	CN7-427	10TCU-Q27
C205	30							
C206	28		NPO-DI 25	TCZ-27	C10Q27C	CCTO-270	CNO-427	10TCC-Q27
C207	1000		EF-001	MFT-1000		CCF-102	CT280A	
C208	1.8-7			829-7				
C209	100		EF-0001	MFT-100				
C210	.5-3			829-3		CV-1	CT565	
C211	33		NPO-DI 33	DTZ-33	C10Q33C	CCTO-33	CNO-433	10TCC-Q33
C212	.5-3			829-3		CV-1	CT565	
C213	1000		DI-1000	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C214	7.25							
C215	18 N220					*		10TCR-Q18
C216	1000		EF-001	MFT-1000		CCF-102	CT280A	
C217	1000		EF-001	MFT-1000		CCF-102	CT280A	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

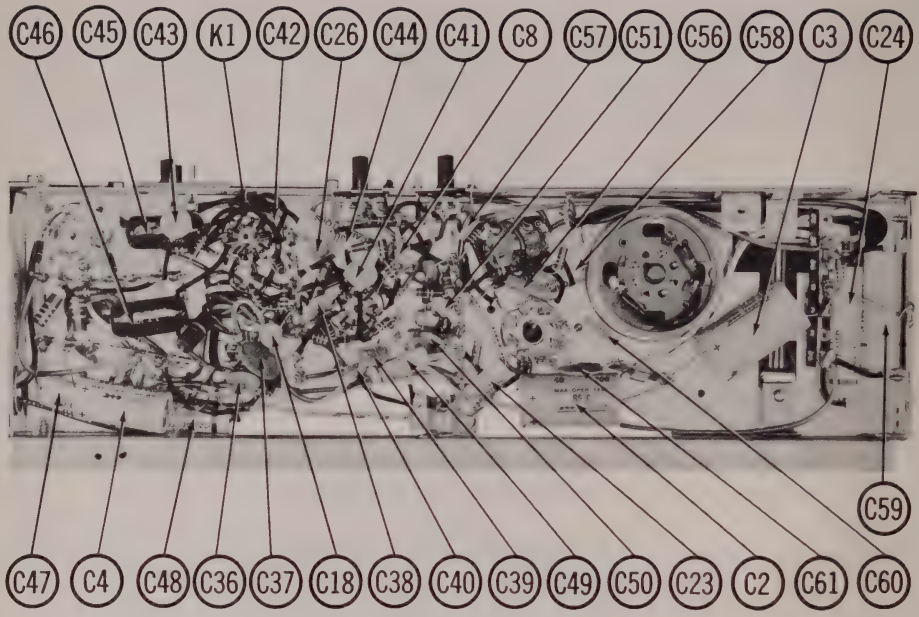
RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

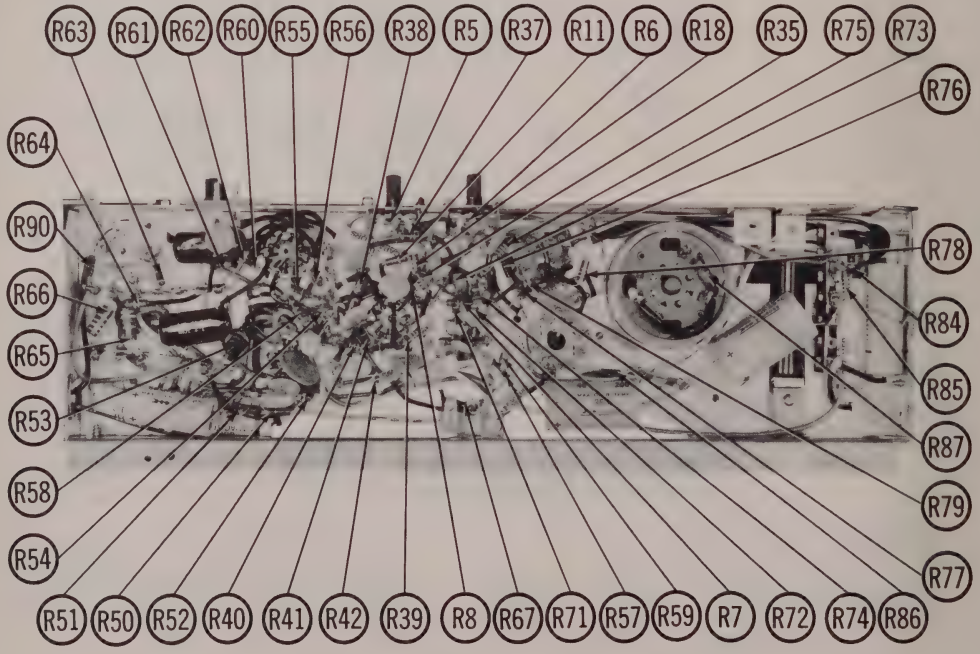
ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R201	47K				R205	1000Ω			
R202	1000Ω				R206	4700Ω			
R203	2700Ω				R207	4700Ω			
R204	220K								



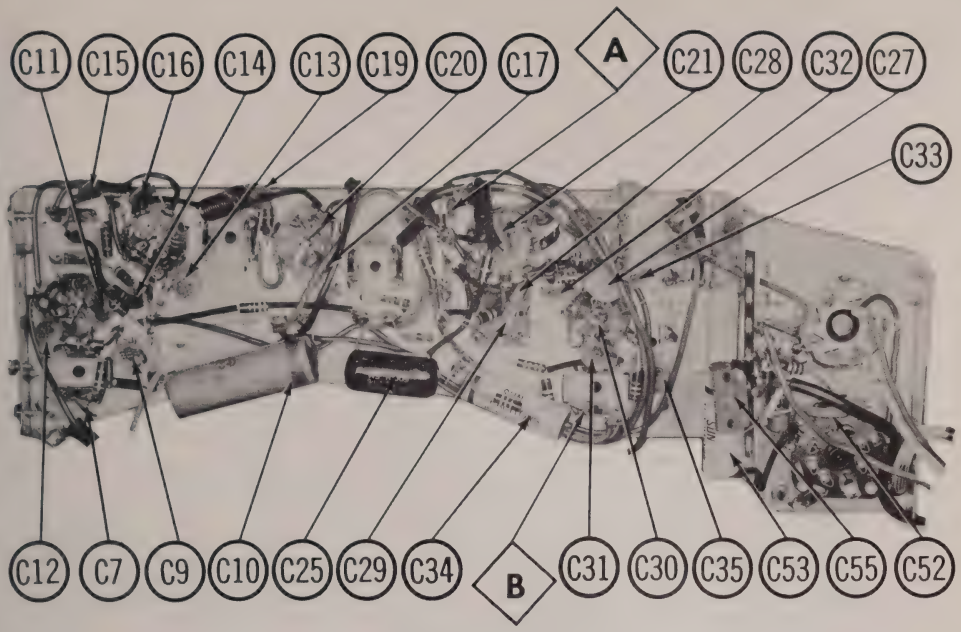
TUNER TA—60 TOP VIEW



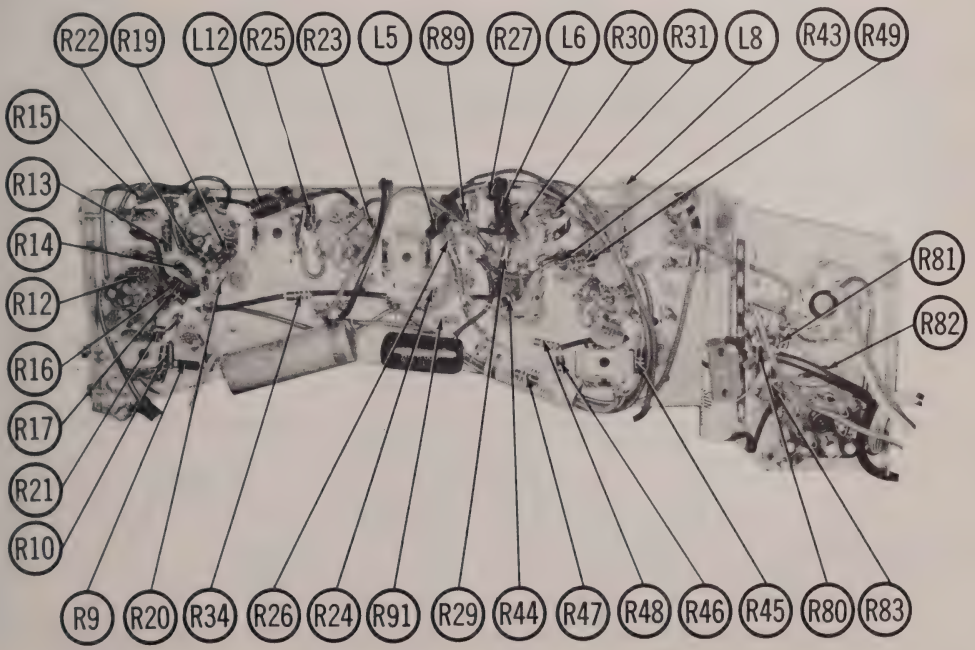
LOWER CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



LOWER CHASSIS BOTTOM VIEW - RESISTOR IDENT.



UPPER CHASSIS BOTTOM VIEW - ALIGN. & CAPACITOR IDENT.

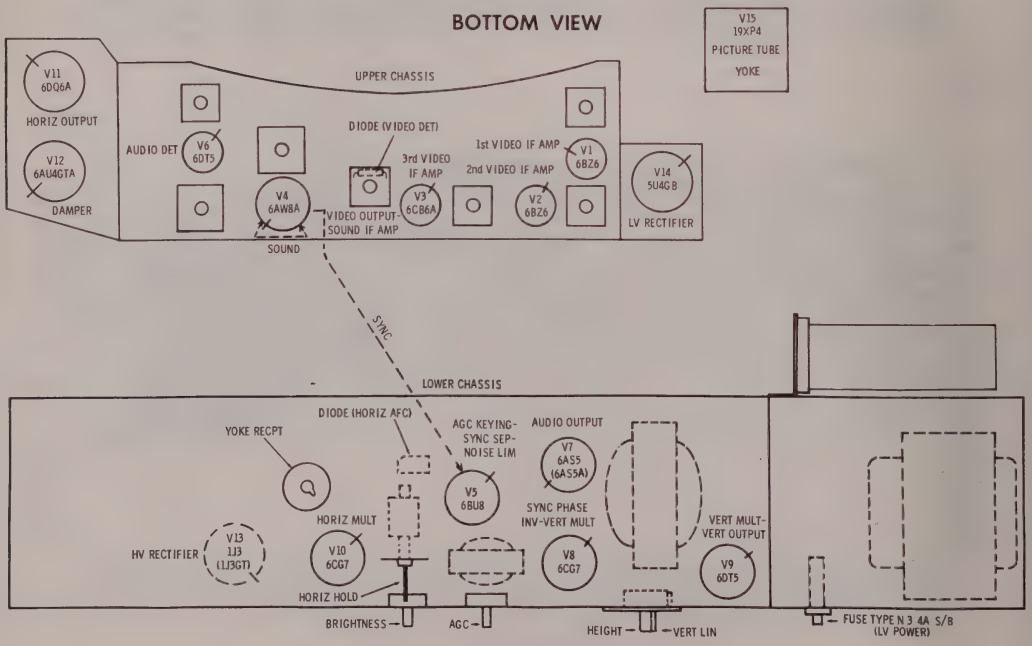


UPPER CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.

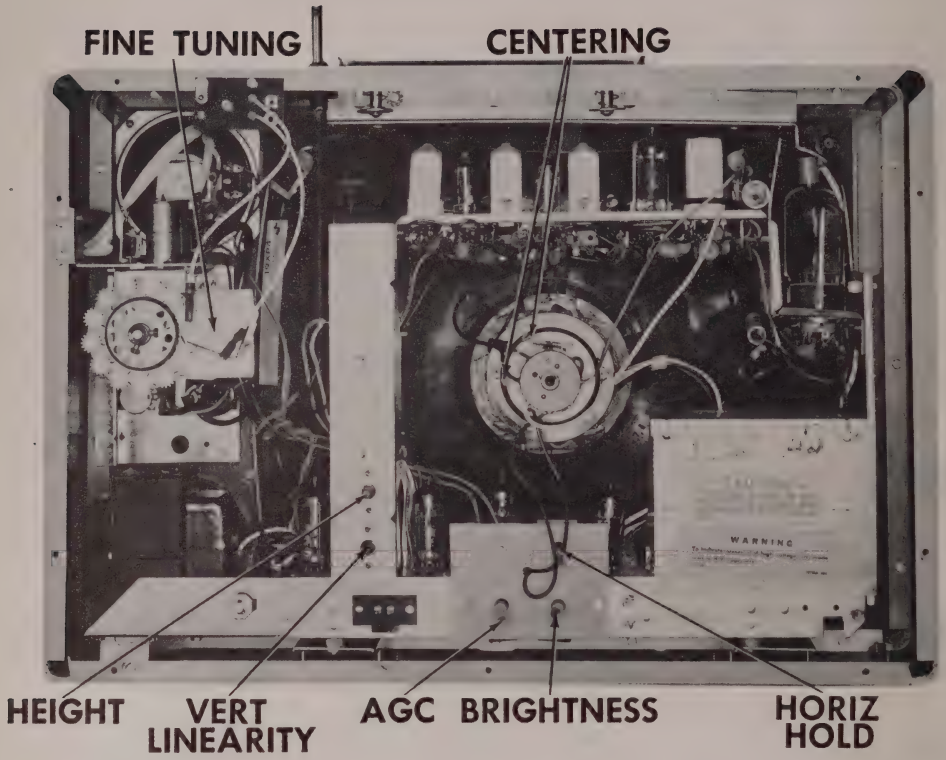
RESISTANCE MEASUREMENTS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6BZ6	150K	47Ω	0Ω	.1Ω	▲540Ω	▲540Ω	0Ω		
V2	6BZ6	100K	120K	.1Ω	0Ω	†520Ω	†520Ω	▲68Ω		
V3	6CB6A	0Ω	150Ω	0Ω	.1Ω	■470Ω	■470Ω	0Ω		
V4	6AW8A	0Ω	100K	■100K	0Ω	.1Ω	● 100Ω	6900Ω	■1200Ω	†7500Ω
V5	6BU8	■0Ω	†8200Ω	1.8meg	.1Ω	0Ω	● 40K	†390K	†40K	■ 4.7meg
V6	6DT6	18Ω	680Ω	.1Ω	0Ω	†560K	■8200Ω	560K		
V7	6AS5	¶60K	520K	.1Ω	0Ω	NC	†270Ω	†550Ω		
V8	6CG7	● †1.5meg	220K	● 100K	0Ω	.1Ω	†12K	1.7meg	3300Ω	0Ω
V9	6DT5	†150Ω	NC	NC	0Ω	.1Ω	2.2meg	● 600Ω	NC	† 430Ω
V10	6CG7	†7700Ω	1meg	1500Ω	0Ω	.1Ω	†100K	56K	1500Ω	0Ω
V11	6DQ6A	NC	0Ω	NC	†12K	470K	TP	.1Ω	0Ω	TOP CAP †8Ω
V12	6AU4GTA	NC	NC	620K	NC	†50Ω	NC	0Ω	.1Ω	
V13	1J3	PINS 1 THRU 8 HAVE INFINITE RESISTANCE								TOP CAP † 470Ω
V14	5U4GB	NC	¶40K	NC	23Ω	NC	25Ω	NC	¶40K	
V15	19XP4	.1Ω	39K	† 150K	†50Ω	NC	NC	● 120K	0Ω	
V201	6FH5	0Ω	3.2meg	0Ω	.1Ω	■1300Ω	0Ω	0Ω		
V202	6CG8A	4700Ω	■47K	0Ω	0Ω	.1Ω	■1300Ω	■330Ω	0Ω	220K
ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
● THIS READING WILL VARY. CONTROL SET FOR NORMAL OPERATION.
† MEASURED FROM PIN 2 OF V14.
† MEASURED FROM PIN 3 OF V12.
NC NO CONNECTION
■ MEASURED FROM PIN 1 OF V7.
▲ MEASURED FROM PIN 2 OF V2.
TP TIE POINT



TUBE PLACEMENT CHART



CABINET—REAR VIEW

HORIZONTAL SWEEP CIRCUIT ADJUSTMENTS

Turn the set on and tune in a TV station, preferably with a test pattern.

Set the Brightness and Contrast Controls for a normal picture.

Turn the Horizontal Hold (Freq.) clockwise until the picture loses sync.

It may be necessary to switch off channel and back again for picture to lose sync.

Turn the Horizontal Hold slowly counterclockwise until the picture just falls into sync.

DISASSEMBLY INSTRUCTIONS

CHASSIS REMOVAL

1. Remove 12 metal screws holding rear cover.
2. Remove rear cover.
3. Remove 4 push-on type knobs.
4. Remove 4 screws holding tuner and control panel assembly.
5. Remove picture tube socket, yoke plug, high voltage lead, and speaker leads.
6. Remove 10 screws holding chassis.
7. Remove chassis.

PHOTOFACT® Folder

**PRODUCTION CHANGE
BULLETIN 265**

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 3 IN SET 515

ADMIRAL MODELS Y4067, Y4131, Y4134, Y4159 (CH. 5K5A, 5K5B)

Admiral Models Y979, Y1002, Y1009, Y1021, Y1022, Y1023, Y1041, Y1043, Y1069 (Ch. 5K5, 5K5A) were covered in PHOTOFACT Folder 3 - Set 515.

Models Y4067, Y4131, Y4132, Y4159 (Ch. 5K5A, 5K5B) are electrically similar except for the following changes.

COMPONENT CHANGES

C1 is increased from 100mmf to 330mmf.

C12 is increased from 100mmf to 330mmf.

R9 is omitted. Pin 3 of V1A (12AX7) is connected to ground.

R18 is omitted. Pin 3 of V3A (12AX7) is connected to ground.

R8 is increased from 100K to 470K.

R17 is increased from 100K to 470K.

C8 is increased from .02mfd to .047mfd.

C15 is increased from .02mfd to .047mfd.

C2C and R13 are omitted. Pin 3 of V2 (6BQ5) is connected to Pin 3 of the speaker socket.

C2D and R22 are omitted. Pin 3 of V4 (6BQ5) is connected to Pin 1 of the speaker socket.

Pins 2 and 4 of the speaker socket are tied together and go to ground through a 100mfd at 25 volt electrolytic capacitor and a 68Ω 2 watt resistor wired in parallel.

(Continued On The Reverse Side)

PRODUCTION CHANGE
BULLETIN 265

SUPPLEMENTAL DATA TO PHOTOFACT FOLDER 1 IN SET 515

MOTOROLA CHASSIS RTS-568, Y, TS-568, Y

Motorola Models Y23C4B, M, W, Y23C5CW, Y23C6B, M, Y23C7CW, Y23K28B, M, W, Y23K29B, M, W, Y23K30B, M, Y23K31CW, Y23K32M, W, Y23K33B, M, W, Y23K34CW, Y23T2B, BZ, CH, M, W, 23C4B, M, W, 23C5CW, 23C6B, M, 23C7CW, 23K28B, M, W, 23K29B, M, W, 23K30B, M, 23K31CW, 23K32M, W, 23K33B, M, W, 23K34CW, 23T2B, BZ, CH, M, W (Ch. RTS-568, Y, TS-568, Y) were covered in PHOTOFACT Folder 1 - Set 515.

The following changes were made by the manufacturer during late production.

Chassis Coding A-05	TO PREVENT BLOOMING R68 is decreased from 8.2Ω to 5.6Ω.
Chassis Coding A-06	TO REDUCE BUSY BACKGROUND R17 is increased from 120K to 220K. R70 is increased from 100K to 180K. R12 is increased from 1.5meg to 2meg.

(Continued On The Reverse Side)

PRODUCTION CHANGE
BULLETIN 265

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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	SPEAKER CHANGES The speaker hook-up is basically the same as the Chassis 5K5A covered in PHOTOFACT Folder 3 - Set 515. SP1 and SP3 are changed from 8" Speakers to 12" Speakers, Part #78C151-6. SP2 and SP4 remain the same except another $3\frac{1}{2}$" speaker is added in series with SP2, also another $3\frac{1}{2}$" speaker is added in series with SP4. C3 and C4 are changed from 4mfd @ 10 volts non-polarized to 4mfd @ 16 volts non-polarized (Part #67A40-2).

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	700B261-2	Control, Model Y4067
Knob	700A208-1	Control, Models Y4131, Y4134, Y4159
Cabinet	35E568-2	Model Y4067
Cabinet	35E624-1	Walnut, Model Y4131
Cabinet	35E624-2	Mahogany, Model Y4132
Cabinet	35E629-9	Fruitwood, Model Y4159

	R13 is decreased from 15meg to 12meg. An 18K resistor is inserted between Pins 1 and 7 of V2 (3BZ6).
Chassis Coding A-07	TO PREVENT THE POSSIBILITY OF PHASE SHIFT C19 is deleted. R20 is deleted. The Junction of R19 and L7 is now connected to ground. C20 is increased from 560mmf to 680mmf.
Chassis Coding A-08	AUDIO OUTPUT CHANGE V8 (6BQ5) is changed to a Type 6GK6. The following changes have to be made to incorporate the use of this tube. Pin 9 of the 6BQ5 becomes Pin 8 for the 6GK6. Break the connection between Pins 1 and 2 of the 6BQ5 and connect the Shield Cable to Pin 2. Connect a jumper wire between Pins 1 and 3. Pin 3 of the 6BQ5 becomes Pin 1 for the 6GK6.

Motorola Models A21K137B, M, A21T69BG, MG, Y21K124B, M, W, Y21T66BZ, CH, 21K124B, M, W, 21T66BZ, CH (Ch. TS-561, Y, WTS-561) were covered in PHOTOFACT Folder 2 - Set 468.

Models Y21K142M, 21K142M (Ch. TS-561, Y) are electrically similar except for the following changes.

Chassis Coding A-05

COMPONENT CHANGES

K2D (3900Ω resistor) located between points K2-1, K2-4 of the Horizontal Sweep Module is omitted. Cut riser wire K2-1. A 2700Ω resistor is then connected to riser K2-4, the other end of the resistor connects to the 240V Source.

C67 is deleted.

R25 is decreased from 12K to 6800Ω.

Chassis Coding A-06

COMPONENT CHANGE

C63 and C64 in early models were 180mmf @ 3KV with Chassis Coding A-06. They are changed to 220mmf @ 2KV.

Chassis Coding A-07

COMPONENT CHANGE

R56 is deleted. It is incorporated into the Vertical Sweep Module K1 (Part #51K53223).

Chassis Coding A-08

COMPONENTS ADDED

A3300Ω resistor is added from the junction of C3, R13, R14 to Pin 1 of the VHF Tuner Power Socket.

A Dual 2X .001mfd Disc Capacitor (Part #21R401058) is added. The common lead connects to the chassis; one lead goes to Pin 3 of the VHF Tuner Power Socket, the other lead connects to the junction of L24 and M3.

Chassis Coding A-09

NOISE GATE CONTROL ADDED

A Noise Gate Control (Part #18K740694) is added. The center arm of the control connects to Pin 2 of V5 (3BU8). R39 is relocated from the Junction of C32, R40, R49 to the high side of the Noise Gate Control. The low side is left open.

TO PROTECT THE CRYSTAL DIODE M4

A 68K resistor and a 4700mfd capacitor (Res-Cap Couplate) in parallel (Part #51K744975) are added between Pin 7 of V4 (6EB8) and the Junction of L9 and R28.

TO IMPROVE SIGNAL TO NOISE RATIO

R13 is increased from 1meg to 1.5meg (Part #6K127000).

Chassis Coding A-10

TO REDUCE FUSE FAILURE

M3 4/10 Amp. @ 250 Volts is increased to 5/10 Amp. @ 250 Volts (Part #65K751794).

Chassis Coding A-11

TO REDUCE VERTICAL DRIFT

K1H (5.6meg resistor) located between riser wires K1-3 and K1-12 is removed from the module. A 5.6meg resistor is then added externally to the same points.

A 180K resistor is added from the junction of C47 and K1-1 to ground.

(Continued On The Reverse Side)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Safety Glass	61C747252	
Picture Tube Mask	13K751505	
Knob	1B751718	VHF Channel Selector
Knob	1V751931	Fine Tuning, Front (VHF Models)
Knob	36K751696	Fine Tuning, Rear (VHF Models)
Knob	1B751730	Fine Tuning, (UHF Models)
Knob	1V751921	Off-On-Volume
Knob	36B751755	Brightness, Vertical Hold
Knob	36K751697	Contrast
Knob	36K746089	Horizontal Hold
Knob	1V752229	Tone (Including Bushing)
Scale	34C751731	UHF Dial Scale
Cabinet	16E752443	Models Y21K142M, 21K142M, Mahogany
Cabinet Leg	16K748131	Models Y21K142M, 21K142M, Mahogany

PHOTOFACT® Folder with CIRCUITRACE®

CAPEHART MODEL T7-S200

CAPEHART MODEL T7-S200

CAPEHART MODEL T7-S200

TRADE NAME	Capehart Model T7-S200
MANUFACTURER	Capehart Corp., 87-46 123rd Street, Richmond Hill 18, Long Island, N. Y.
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver
POWER SUPPLY	6 Volts DC RATING 7MA @ 6 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	540 — 1600KC 20MA @ 6 Volts DC (Signal, Normal Volume)
	SHORT WAVE 4—10MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3, A5. . . GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538
A4, A6, A7, A9. . GENERAL CEMENT #5000, 5003, 5066, 8271, 8272, 8276, 8277, 8290, 8609, 8722, 9150, 9298
WALSCO #2515, 2516, 2518, 2519, 2525, 2541
A8. . . . . GENERAL CEMENT #9440

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400~ Mod.)	(MW) Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	Adjust for maximum output while rocking tuning gang.
5.	"	10MC	(SW) 10MC	"	A7	Adjust for maximum output.
6.	"	4MC	4MC	"	A8	"
7.	"	8MC	8MC Signal.	"	A9	Adjust for maximum output while rocking tuning gang.

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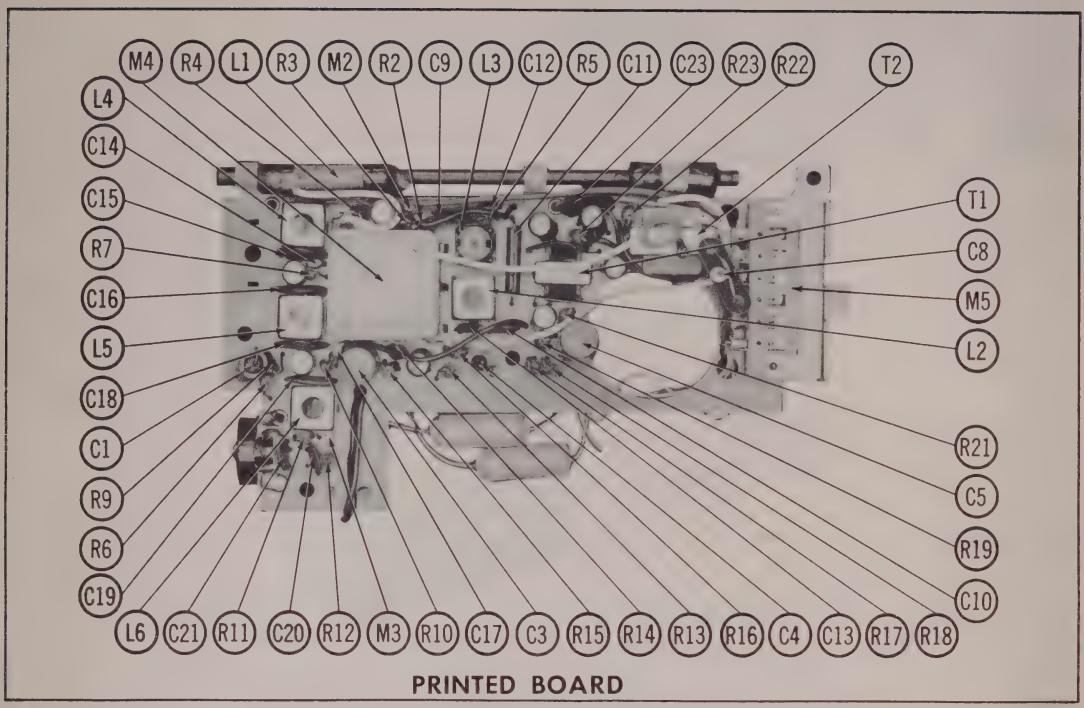
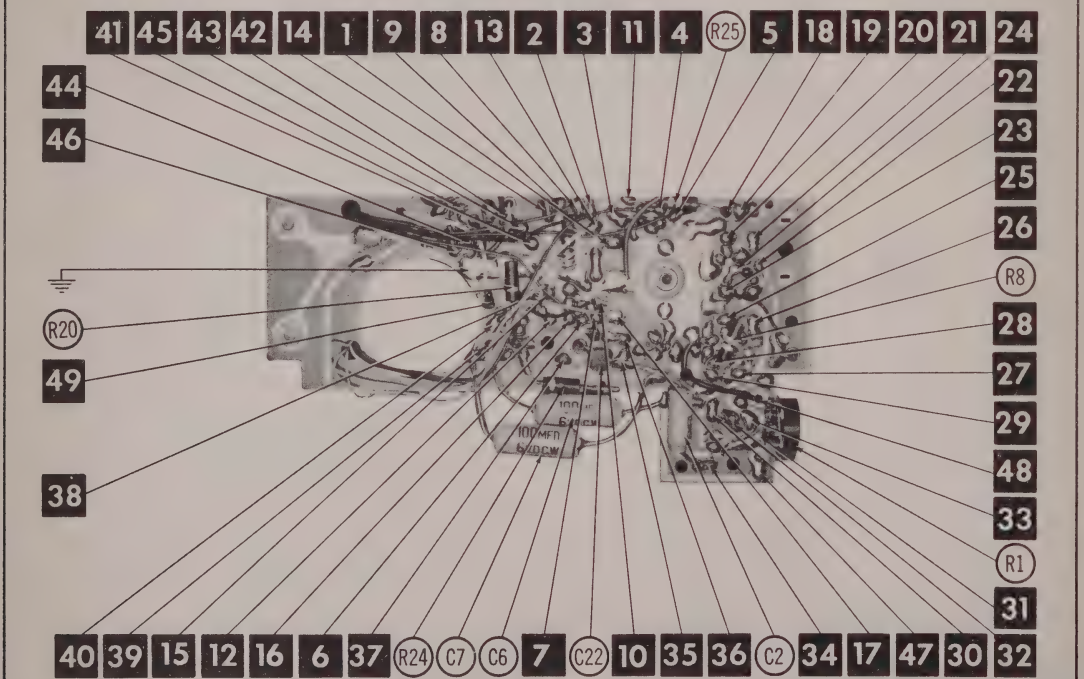
KF300R

SET 542 FOLDER 4



PRINTED BOARD



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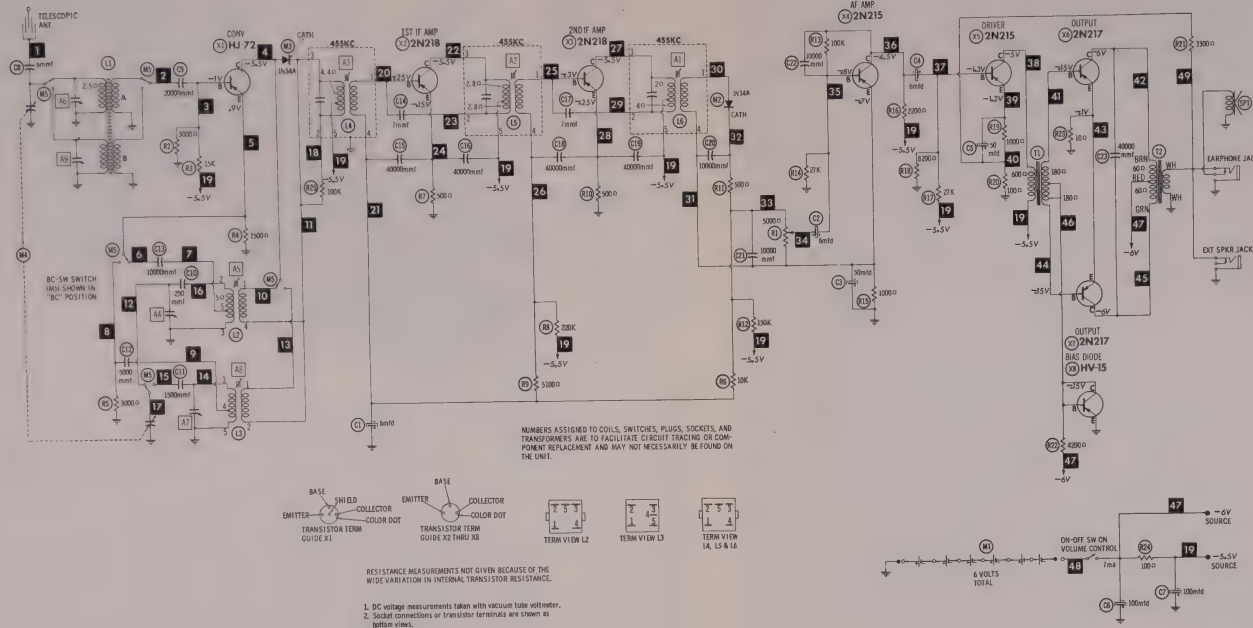
PRINTED BOARD


TELESCOPIC ANT
CONV X1 HJ-72
CATH
1ST IF AMP X2 2N218
2ND IF AMP X3 2N218
455KC
AF AMP X4 2N215
DRIVER X5 2N215
OUTPUT X6 2N217
OUTPUT X7 2N217
BIAS DIODE X8 HV-15
1N34A
BC-SW SWITCH (NOT SHOWN IN "BC" POSITION
EARPHONE JACK
EXT SPKR JACK
SP1
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
BASE
SHIELD
EMITTER
COLLECTOR
COLOR DOT
TRANSISTOR TERM GUIDE X1
TRANSISTOR TERM GUIDE X2 THRU X8
TERM VIEW L2
TERM VIEW L3
TERM VIEW L4, L5 & L6
RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.
ON-OFF SW ON VOLUME CONTROL
6 VOLTS TOTAL
-6V SOURCE
-5.5V SOURCE
7ma
100mfd

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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CAPEHART MODEL T7-5200

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	HJ-72	Converter				PNP
X2	2N218	1st IF Amplifier	2N218	2N482	2N218	PNP
X3	2N218	2nd IF Amplifier	2N218	2N482	2N218	PNP
X4	2N215	AF Amplifier	2N407	2N362	2N104	PNP
X5	2N215	Driver	2N407	2N362	2N104	PNP
X6	2N217	Output	2N407	2N633	2N217	PNP
X7	2N217	Output	2N407	2N633	2N217	PNP
X8	HV-15	Bias Diode	1N2326			

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	CAPEHART PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	6	6			NLW5-6	TT10X6	MLV10-6	TE-1085	
C2	6	6			NLW5-6	TT10X6	MLV10-6	TE-1085	
C3	50	6		BCD6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C4	6	6			NLW5-6	TT10X6	MLV10-6	TE-1085	
C5	50	6		BCD6050	NLW50-6	TT6X50	ML50-6	TE-1100	
C6	100	6		PTT-6100	NLW100-6	TT6X100	ML100-6	TE-1102	
C7	100	6		PTT-6100	NLW100-6	TT6X100	ML100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C8	6			DD-060	C10V6C			10TS-V60
C9	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C10	250		DI-250	DD-251	L10T25	CCD-251	GP325	10TS-T25
C11	1500		1487-0015	DD-152	5R5D15	CM-20E-152	MC256	1FM-215
C12	5000		C80V502AM	DA-502	H-05D5	CCD-502	TA-250	TG-D50
C13	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C14	7							
C15	40000							
C16	40000							
C17	7		DI-6.8	DD-6R8	L10V7	CCTO-6R8	CNO-568	10TCC-V68
C18	40000							
C19	40000							
C20	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C21	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C22	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C23	40000							

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	CAPEHART PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/10		B16-214				Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3000Ω				R14	27K			
R3	15K				R15	1000Ω			
R4	1500Ω				R16	2200Ω			
R5	3000Ω				R17	27K			
R6	10K				R18	8200Ω			
R7	500Ω				R19	1000Ω			
R8	220K				R20	100Ω			
R9	5100Ω				R21	3300Ω			
R10	500Ω				R22	4200Ω			
R11	500Ω				R23	10Ω			
R12	150K				R24	100Ω			
R13	100K				R25	100K			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		CAPEHART PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1A	BC Loopstick						
B	SW Loopstick						
L2	BC Oscillator						
L3	SW Oscillator						
L4	1st IF						
L5	2nd IF						
L6	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CAPEHART PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1	1	TRT-30					

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CAPEHART PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	200Ω CT	6-8Ω	TRT-32		TA-20①			① Use 12Ω Secondary.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CAPEHART PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	CAPEHART PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			930 *		1015 *		M-15R *	* 4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CAPEHART PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A			1N34A	1N34A	Detector (Pigtail)
M3	1N34A			1N34A	1N34A	Overload & AVC (Pigtail)

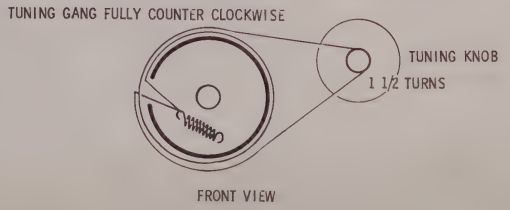
MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M4	Tuning Cap		2 Gang
M5	Switch		BC-SW (Slide Type)

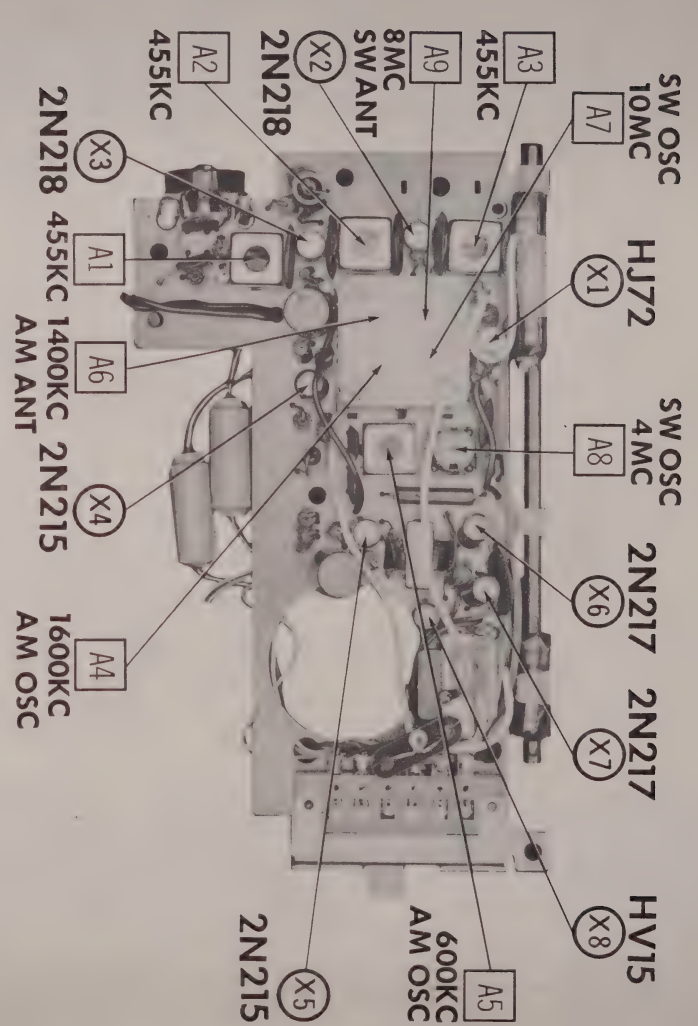
WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TUNING DRIVE CORD STRINGING



CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

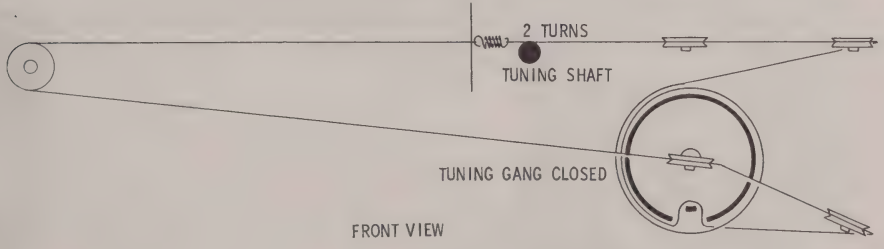
GRUNDIG MAJESTIC MODEL TEDDY BOY II/59E

GRUNDIG MAJESTIC MODEL
TEDDY BOY II/59E

GRUNDIG MAJESTIC MODEL
TEDDY BOY II/59E

TRADE NAME	Grundig Majestic Model Teddy Boy II/59E
IMPORTER	Majestic International Sales, 743 N. LaSalle Street, Chicago 10, Illinois
TYPE SET	Battery Operated Transistorized Portable BC-FM-SW Receiver
POWER SUPPLY	9 Volts DC RATING 15MA @ 9 Volts DC (BC, No Signal, Min. Volume) 30MA @ 9 Volts DC (BC, Signal, Normal Volume)
TUNING RANGE – BROADCAST 517 – 1620KC	FREQ. MOD. 88–108MC SHORT WAVE 5.9–12.3MC

DIAL CORD STRINGING



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KF620

SET 542 FOLDER 5

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	CAPEHART PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	200Ω CT	6-8Ω	TRT-32		TA-20①			① Use 12Ω Secondary.

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	CAPEHART PART No.	QUAM PART No.	
SP1	2 1/4"	PM	6-8Ω			

BATTERIES

ITEM No.	VOLTAGE	CAPEHART PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V			930 *		1015 *		M-15R *	* 4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		CAPEHART PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A			1N34A	1N34A	Detector (Pigtail)
M3	1N34A			1N34A	1N34A	Overload & AVC (Pigtail)

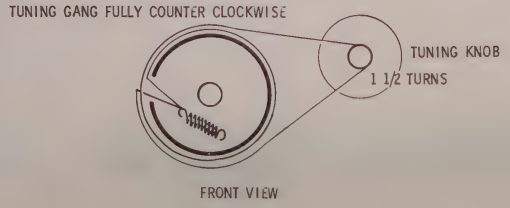
MISCELLANEOUS

ITEM No.	PART NAME	CAPEHART PART No.	NOTES
M4	Tuning Cap		2 Gang
M5	Switch		BC-SW (Slide Type)

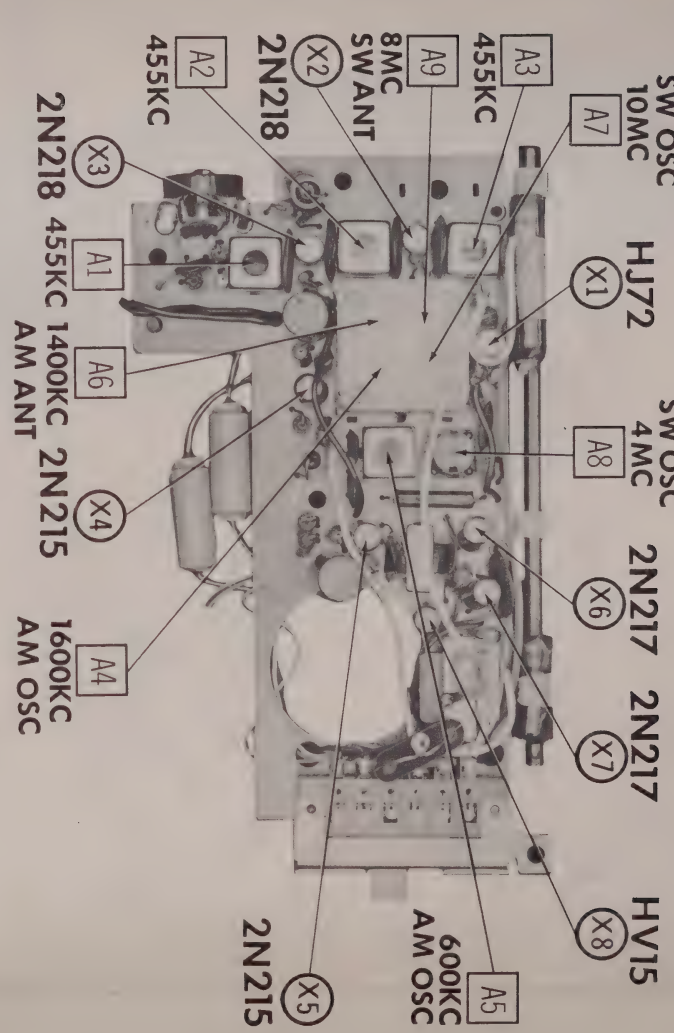
WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

TUNING DRIVE CORD STRINGING



CHASSIS—TOP VIEW



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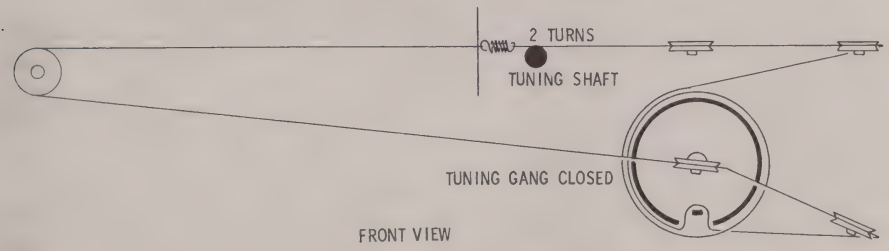
GRUNDIG MAJESTIC MODEL TEDDY BOY II/59E

GRUNDIG MAJESTIC MODEL
TEDDY BOY II/59E

GRUNDIG MAJESTIC MODEL
TEDDY BOY II/59E

TRADE NAME	Grundig Majestic Model Teddy Boy II/59E
IMPORTER	Majestic International Sales, 743 N. LaSalle Street, Chicago 10, Illinois
TYPE SET	Battery Operated Transistorized Portable BC-FM-SW Receiver
POWER SUPPLY	9 Volts DC RATING 15MA @ 9 Volts DC (BC, No Signal, Min. Volume) 30MA @ 9 Volts DC (BC, Signal, Normal Volume)
TUNING RANGE — BROADCAST	517 — 1620KC FREQ. MOD. 88—108MC SHORT WAVE 5.9—12.3MC

DIAL CORD STRINGING



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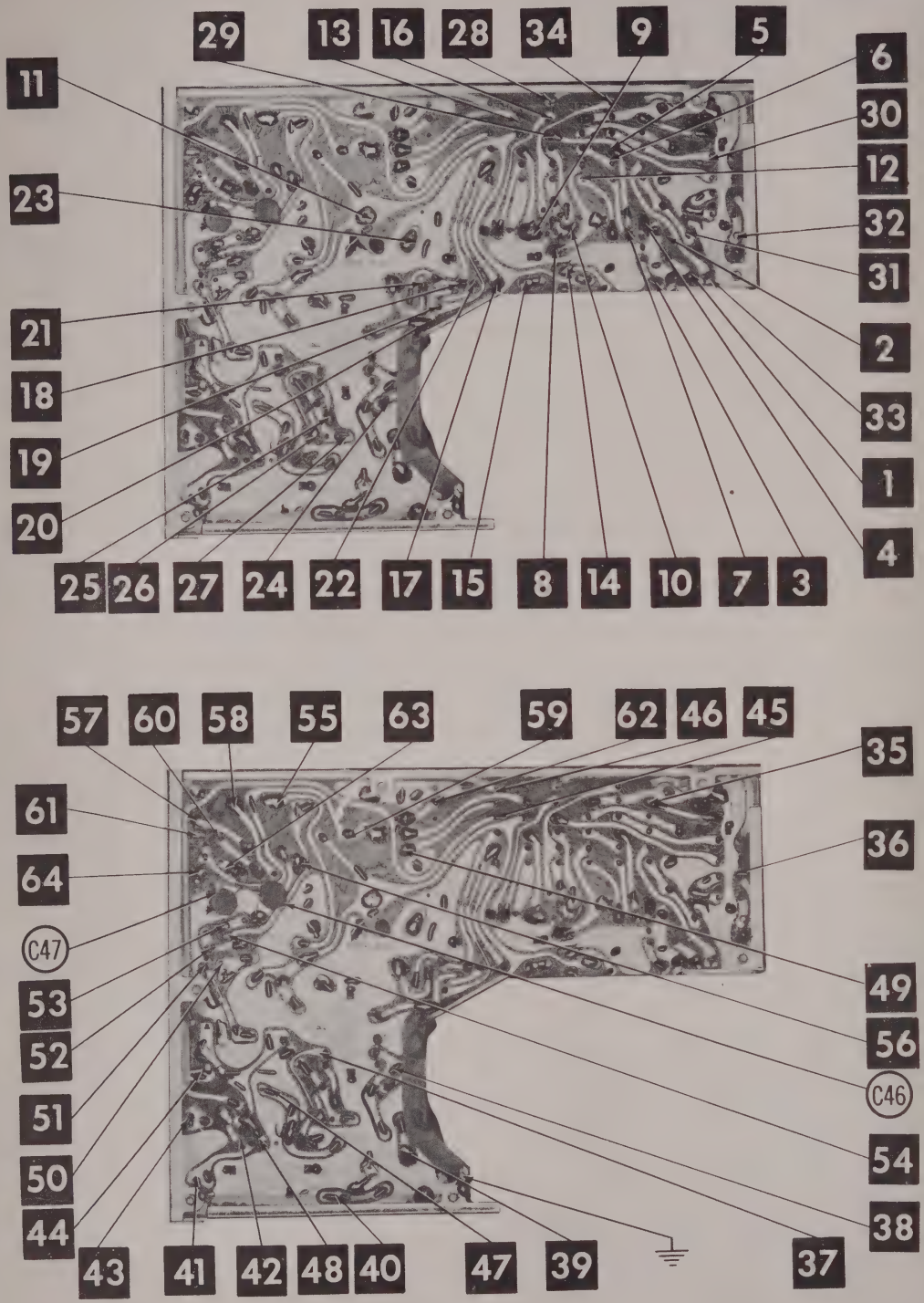
KF620

SET 542 FOLDER 5



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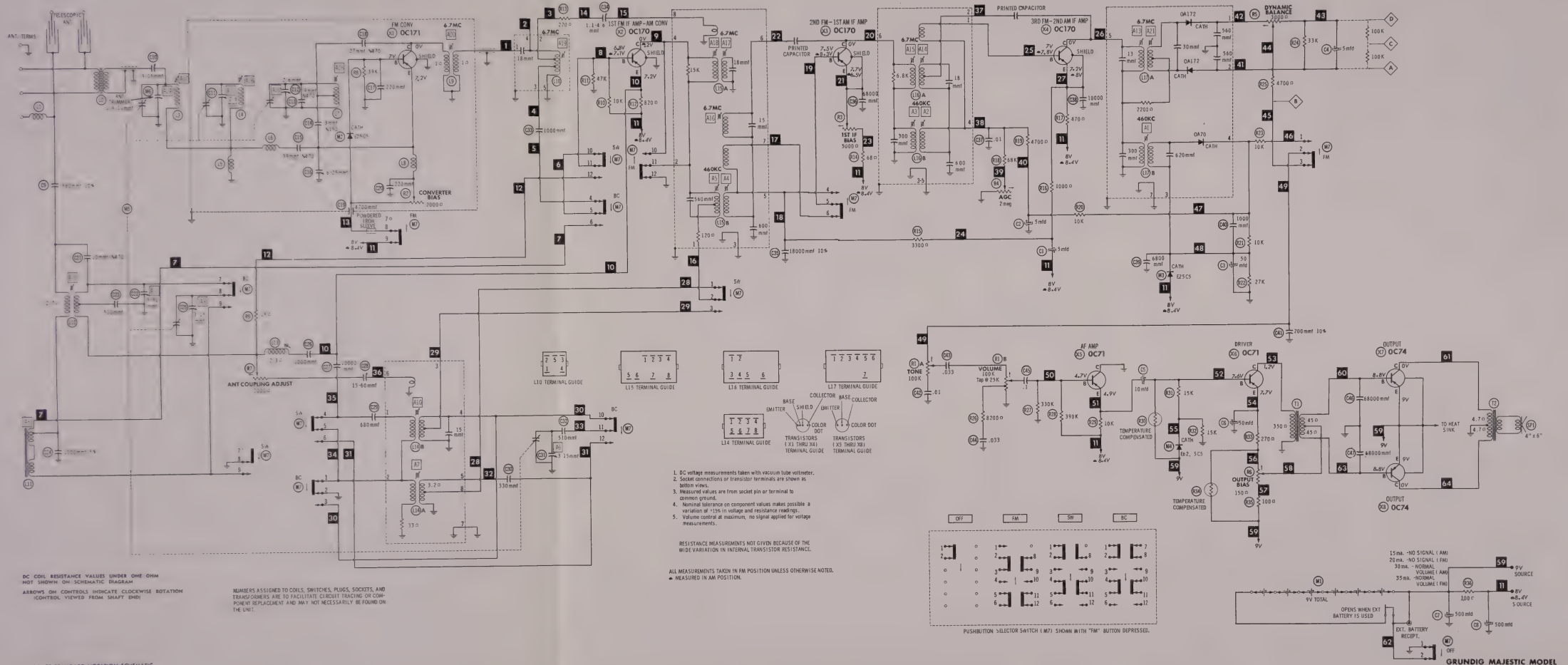

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±10% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

ALL MEASUREMENTS TAKEN IN FM POSITION UNLESS OTHERWISE NOTED.
▲ MEASURED IN AM POSITION.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC
with CIRCUITRACE

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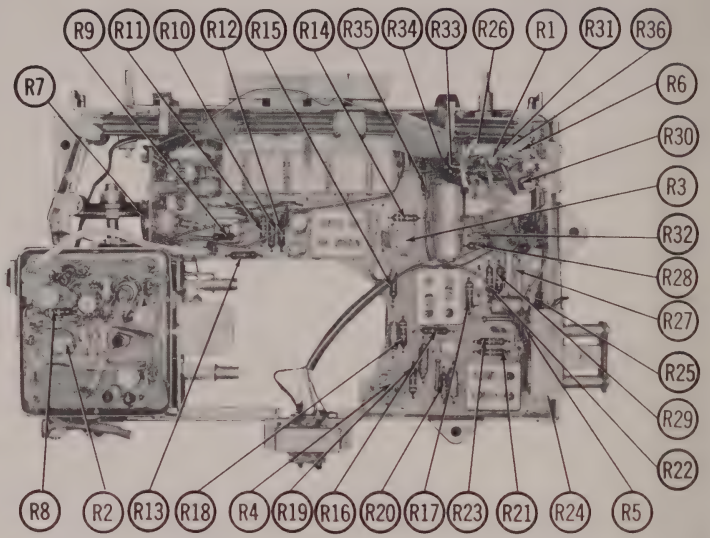
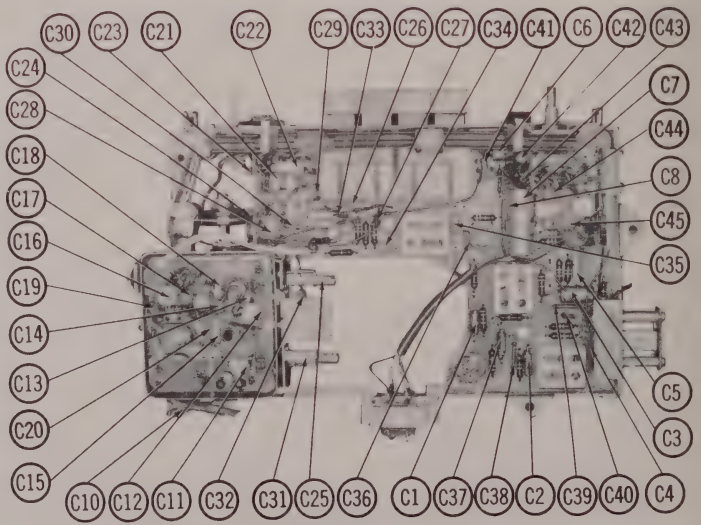
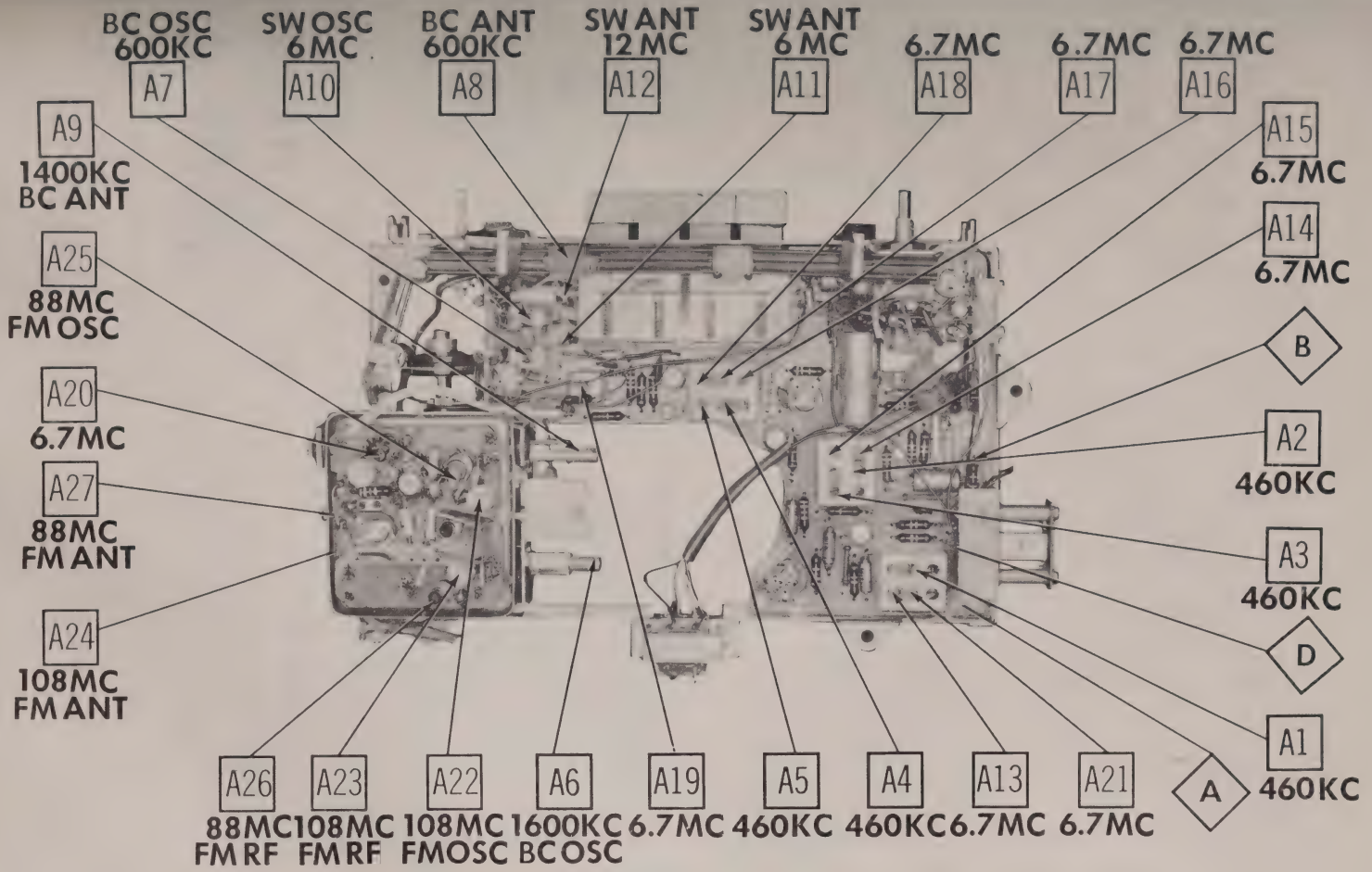
GRUNDIG MAJESTIC MODEL TEDDY BOY II/59E



CHASSIS TOP VIEW-RESISTOR IDENT.



CHASSIS TOP VIEW-CAPACITOR IDENT.



CHASSIS TOP VIEW-ALIGNMENT IDENT.

GRUNDIG MAJESTIC MODEL
TEDDY BOY II/59E

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools: A22, A23, A24....GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 522, 2523, 2524, 2534, 2537, 2538

AM ALIGNMENT — SELECTOR IN AM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to base of AM converter transistor.	460KC (400~ 30% AM).	(BC) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4, A5	Adjust for maximum output.
2.	Loop	1600KC	1600KC	"	A6	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A7, A8	"
4.	"	1400KC	1400KC Signal.	"	A9	"
5.	"	6MC	(SW) 6MC	"	A10, A11	"
6.	"	12MC	12MC	"	A12	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM — SELECTOR IN FM POSITION

Connect 2-100K (± 1%) resistors in series from point Ⓐ to point Ⓓ (across C4). The junction of these 2 resistors is alignment point Ⓒ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
7.	Across FM antenna terminals.	6.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point Ⓐ. Common to chassis.	A13, A14, A15, A16, A17, A18, A19, A20	Adjust for maximum deflection.
8.	"	"	"	DC probe to point Ⓑ. Common to point Ⓒ.	A21	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
7.	Across FM antenna terminals.	6.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point Ⓐ. Low side to chassis.	A13, A14, A15, A16, A17, A18, A19, A20	Disconnect stabilizing capacitor C4. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C4.
8.	"	"	"	Vert. amp. to point Ⓑ. Low side to chassis.	A21	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A13 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
9.	Across FM antenna terminals.	108MC (Unmod.)	(FM) 108MC	DC probe to point Ⓐ. Common to chassis.	A22, A23, A24	Adjust for maximum deflection.
10.	"	88MC	88MC	"	A25, A26, A27	"

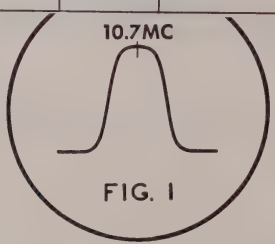


FIG. 1

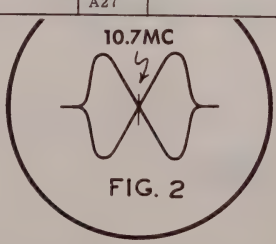


FIG. 2

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	OC171	FM Converter				PNP
X2	OC170	1st FM IF Amp. -AM Conv.				PNP
X3	OC170	2nd FM - 1st AM IF Amp.				PNP
X4	OC170	3rd FM - 2nd AM IF Amp.				PNP
X5	OC71	AF Amplifier	2N406	2N362	2N406	PNP
X6	OC71	Driver	2N406	2N362	2N406	PNP
X7	OC74	Output	2N408			PNP
X8	OC74	Output	2N408			PNP

ELECTROLYTIC CAPACITORS

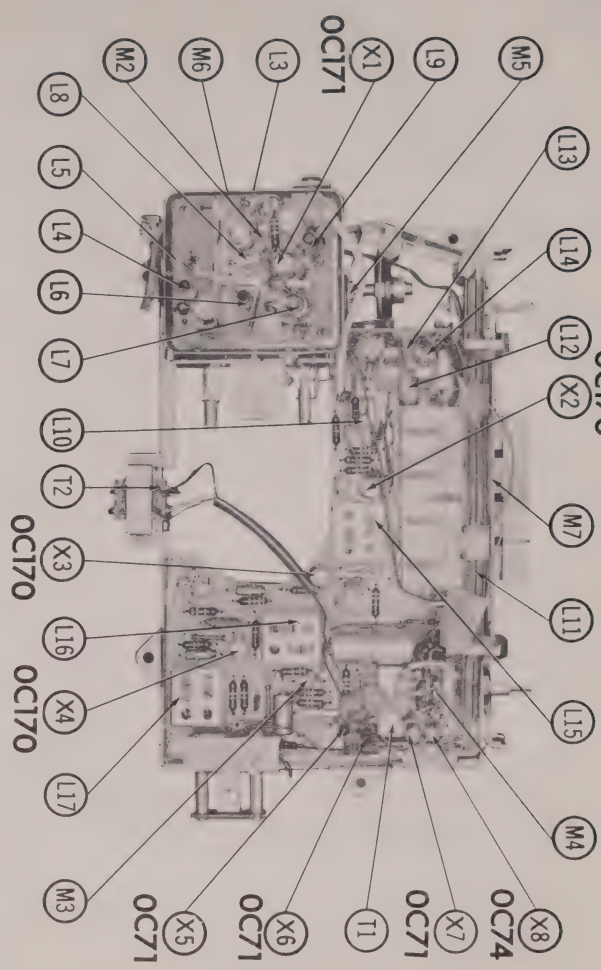
ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	GRUNDIG PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	5	12.5		PTT64	NLW5-15	TT25X5	MLV5-15	TE-1152	
C2	5	12.5		PTT64	NLW5-15	TT25X5	MLV5-15	TE-1152	
C3	50	12.5		PTT72	NLW50-15	TT15X50	MLV50-15	TE-1160	
C4	5	12.5		PTT64	NLW5-15	TT25X5	MLV5-15	TE-1152	
C5	10	8		PTT39	NLW10-15	TT12X10	MLV10-10	TE-1114	
C6	50	12.5		PTT72	NLW50-15	TT15X50	MLV50-15	TE-1160	
C7	500	12		PRS1170			TD-500-15	TVA-1132	
C8	500	12		PRS1170			TD-500-15	TVA-1132	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9	560 10%			D6-561	5R5T56	CCD-561	GP356	10TS-T56
C10	3-15							
C11	2-6							
C12	2-6							
C13	9 N470					*		
C14	3 N150					*		
C15	39 N470					*		
C16	6-25							
C17	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C18	27 N470					*		
C19	4700							
C20	220		DI-220	DD-221	L10T22	CCD-221	B-322	10TS-T22
C21	10 N470					*		
C22	3-30							
C23	510		SI 510	D6-501	L10T51	CCD-501	B-350	10TS-T50
C24	1000 5%				5R5D1	CM-19B-102J	MCJ255	MS-21
C25	3-15							
C26	1000		SI 1000	D6-102	BYA10D1	CCD-102	B-210	5HK-D10
C27	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C28	15-60							
C29	680		SI 680	D6-681	BYA10T68	CCD-681	B-368	10TS-T68
C30	330		SI 330	D6-331	L10T33	CCD-331	B-333	10TS-T33
C31	3-15							
C32	510		SI 510	D6-501	L10T51	CCD-501	B-350	10TS-T50
C33	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C34	1.1-4.6							
C35	.18000 10%				DPMS4S2	6DP-2-203		4TM-S20
C36	68000				DPMS4S68			4PS-S68
C37	.01 125V		P288N-01	D6-103	CUB2S1	4DP-1-103	GEM-211	2TM-S10
C38	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C39	6800		SI 6800	D6-682	BYA10D68	CCD-682	B-268	5HK-D68
C40	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C41	200 10%			D6-201	L10T2	CCD-201	GP320	10TS-T20
C42	.01 250V		P488N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C43	.033 250V		P488N-033	DD-303	DPMS4S33	4DP-2-333	GEM-4133	4PS-S33
C44	.033 250V		P488N-033	DD-303	DPMS4S33	4DP-2-333	GEM-4133	4PS-S33
C45	.1 250V		P488N-1	DF-104	CUB4P1	4DP-3-104	GEM-401	4TM-S10
C46	68000				DPMS4S68			4PS-S68
C47	68000				DPMS4S68			4PS-S68

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	GRUNDIG PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	100K	½	7801-262					Tone
B	100K Tap @ 25K	½						Volume
R2	2000Ω	1/4						Converter Bias
R3	500Ω	1/4						1st IF Bias
R4	2meg	1/4						AGC
R5	3000Ω	1/4						Dynamic Balance
R6	150Ω	1/4						Output Bias
R7	2000Ω	1/4						Antenna Coupling Adjust

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R8	39K				R23	10K			
R9	15Ω				R24	33K			
R10	10K				R25	4700Ω			
R11	47K				R26	8200Ω			
R12	820Ω				R27	330K			
R13	220Ω				R28	390K			
R14	68Ω				R29	10K			
R15	3300Ω				R30	Temp. Comp.			Pt. #1810-212
R16	1000Ω				R31	15K			
R17	470Ω				R32	15K			
R18	68K				R33	270Ω			
R19	4700Ω				R34	Temp. Comp.			
R20	10K				R35	100Ω			
R21	10K				R36	100Ω			
R22	27K								

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		GRUNDIG PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke	BV1976					
L2	FM Ant. Trans.	9238-097					
L3	FM Ant.	9229-006					
L4	FM RF	9226-105					
L5	RF Choke						
L6	RF Choke	9226-106					
L7	FM Osc.	9229-102					
L8	RF Choke	BV1976					
L9	1st FM IF	9226-104					
L10	2nd FM IF	7214-202					
L11	Loopstick	9234-071					
L12	SW Ant.	9208-101					
L13	Trap	9201-111					
L14A	BC Osc.	7215-502					
B	SW Osc.						
L15A	3rd FM IF	7216-304					
B	1st AM IF						
L16A	4th FM IF	7216-305					
B	2nd AM IF						
L17A	Ratio Detector	7216-306					
B	3rd AM IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	GRUNDIG PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.8	1	9030-017					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	GRUNDIG PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	350Ω CT	3-4Ω	9030-018					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	GRUNDIG PART No.	QUAM PART No.	
SP1	4"x 6"	PM	3-4Ω	362/12-0	46A07	

BATTERIES

ITEM No.	VOLTAGE	GRUNDIG PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	*		230 *		A100 *		M-13R *	* 6 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		GRUNDIG PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	E25C5 ①					① Bias (Selenium)
M3	E25C5 ①					
M4	E62, 5C5 ①					

MISCELLANEOUS

ITEM No.	PART NAME	GRUNDIG PART No.	NOTES
M5	Tuning Cap.	9653-413	4 Gang
M6	Variable Cap.		1.9-11mmf, Antenna Trimmer
M7	Switch	7414-496	Function Selector, Pushbutton Type

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder

HEATH MODELS
CB-1, W-CB-1

HEATH MODELS
CB-1, W-CB-1

HEATH MODELS
CB-1, W-CB-1

TRADE NAME	Heath Models CB-1 (Kit), W-CB-1 (Wired)
MANUFACTURER	Heath Co., A Subsidiary of Daystrom Inc., Benton Harbor, Michigan
TYPE SET	AC-Battery Operated 4 Tube Citizens Band Transmitter-Receiver
POWER SUPPLY	105 — 125 Volts AC, 50-60 Cycles (or) 6 Volt Storage Battery (or) 12 Volt Storage Battery
RATING	26 Watts, .28 Amp. @117 Volts AC (Receiver); 32 Watts, .34 Amp. @117 Volts AC (Transmit) 1.8 Amp. @6.3 Volts DC .9 Amp. @12.6 Volts DC
TUNING RANGE	Any One of Citizens Band Channels 1 thru 23 (Transmitter is Crystal Controlled, Receiver is Continously Tuneable)

ALIGNMENT PROCEDURE

If the Tuning Capacitor fails to cover the proper tuning range, adjust A1.
Connect the DC probe of the VTVM to pin 7 (grid) of the Final, Common to chassis. Switch on Transmitter and adjust A2 for maximum deflection. Using a field strength meter, adjust A3 for maximum output from the transmitter.
If the transmitter interfers with TV reception, adjust trap A4 for MINIMUM interference.

NOTICE

ONLY THOSE PERSONS PROPERLY LICENSED BY FCC ARE PERMITTED TO MAKE CRYSTAL SUBSTITUTION OR EFFECT REPAIRS ON THE TRANSMITTER PORTION OF THIS UNIT.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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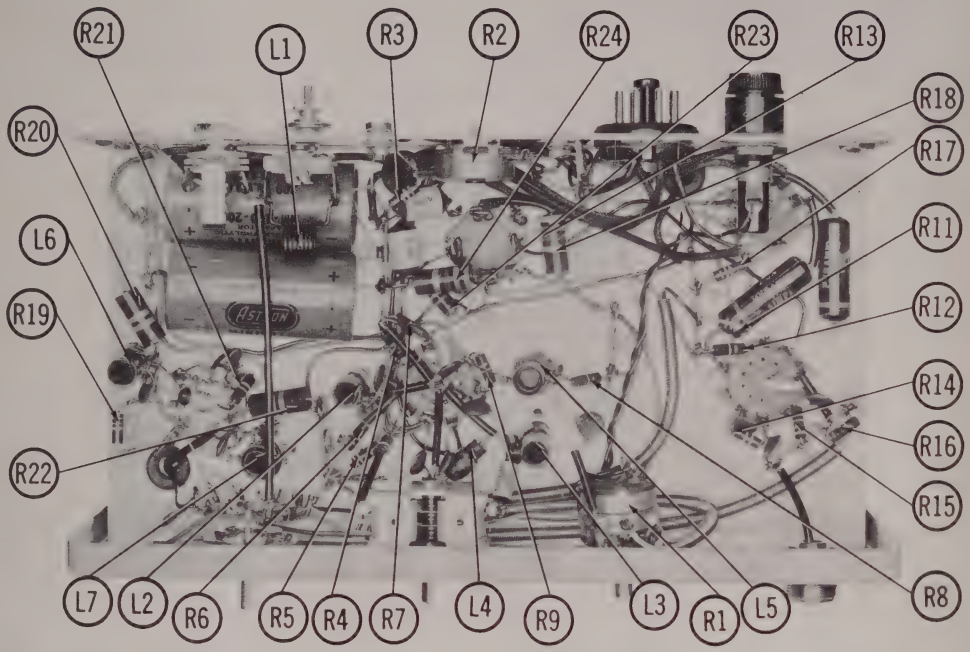
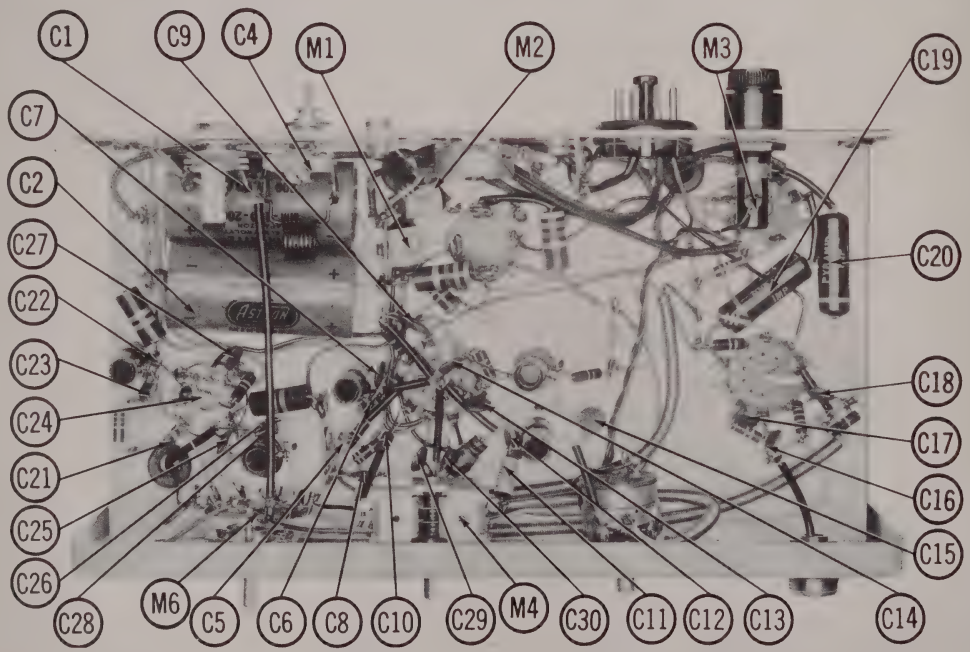
KZ617

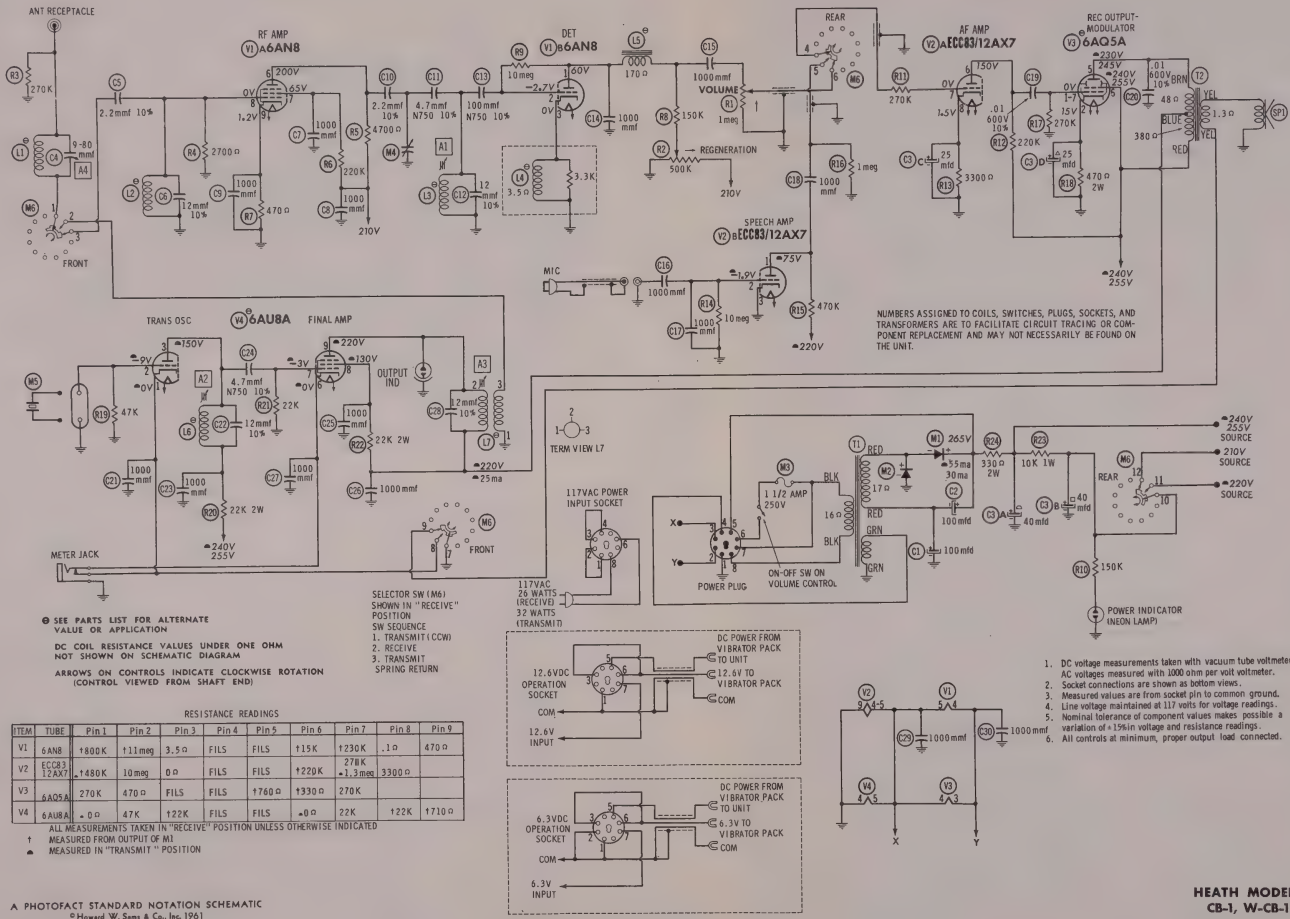
SET 542 FOLDER 6



CHASSIS BOTTOM VIEW - RESISTOR & INDUCTOR IDENT.



CHASSIS BOTTOM VIEW - CAPACITOR & MISC. IDENT.



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

Θ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	6AN8	†800K	†11meg	3.5Ω	FILS	FILS	†15K	†230K	.1Ω	470Ω
V2	ECC83 12AX7	▲†480K	10meg	0Ω	FILS	FILS	†220K	278K ▲1.3meg	3300Ω	
V3	6AQ5A	270K	470Ω	FILS	FILS	†760Ω	†330Ω	270K		
V4	6AU8A	▲0Ω	47K	†22K	FILS	FILS	▲0Ω	22K	†22K	†710Ω

ALL MEASUREMENTS TAKEN IN "RECEIVE" POSITION UNLESS OTHERWISE INDICATED

† MEASURED FROM OUTPUT OF M1

▲ MEASURED IN "TRANSMIT" POSITION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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HEATH MODELS CB-1, W-CB-1

PARTS LIST AND DESCRIPTIONS

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	RF Amp. -Det.	6AN8	V3	Rec. Output - Modulator	6AQ5A (6AQ5) *
V2	AF Amp. -Sqeech Amp.	ECC83/12AX7	V4	Trans. Osc. -Final Amp.	6AU8A (6AU8) *

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	HEATH PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	100	200	C-25-57	PR81595	BR10035	TC1265	TD-100-200	TVA8-1445 *	
C2	100	200	C-25-57	PR81595	BR10035	TC1265	TD-100-200	TVA8-1445 *	
C3A	▲ 40	450	B-25-86	AFH4-79	D0663	FP447	TMQ-4550	TVL-4737	
B	■ 40	350							
C	25	25							
D	▲ 25	25							

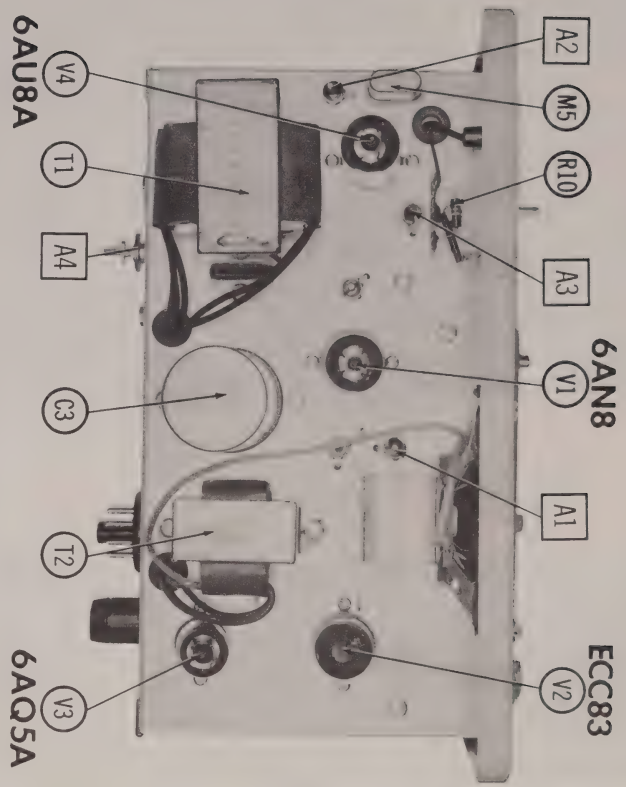
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	9-80	#B-31-20				462		
C5	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C6	12 10%		1469-000012	TCZ-12	22R5Q12	CM-19B-120K	CNO-412	MS-412
C7	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C8	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C9	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C10	2.2 10%		NPO-SI 2.2	TCZ-2R2	C10V22C	CCTO-2R2	CNO-522	10TCC-V22
C11	4.7 N750 10%			TCN-5	C10V5C	CCTN-050	CN7-547	10TCU-V50
C12	12 10%		1469-000012	TCZ-12	22R5Q12	CM-19B-120K	CNO-412	MS-412
C13	100 N750 10%		N750-DI 100	DTN-100	C10T1U	CCTN-101	CN7-101	10TCU-T10
C14	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C16	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
£17	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C18	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C19	.01 600V 10%		V84C6SI-10%		PM6S1	6DP-2-103	GEM-1611	6TM-S10
C20	.01 600V 10%		V84C6SI-10%		PM6S1	6DP-2-103	GEM-1611	6TM-S10
C21	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C22	12 10%		1469-000012	TCZ-12	22R5Q12	CM-19B-120K	CNO-412	MS-412
C23	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C24	4.7 N750 10%			TCN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C25	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C26	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	EMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C27	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C28	12 10%		1469-000012	TCZ-12	22R5Q12	CM-19B-120K	CNO-412	MS-412
C29	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C30	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

Heath Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HEATH PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	½	A-19-27	B-70-S	A47-1meg-Z	Q13-137	U53	Volume
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
C	Switch			Not Req.	SWE-12	76-1	US-26	Power Off-On
R2A	500K	½	E-10-60	TT-59	B47-500K-S	B11-133	TA55L	Regeneration
B	Shaft			Not Req.	Not Req.	TM4	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	270K				R14	10meg			
R4	2700Ω				R15	470K			
R5	4700Ω				R16	1meg			
R6	220K				R17	270K			
R7	470Ω				R18	470Ω 2W			
R8	150K				R19	47K			
R9	10meg				R20	22K 2W			
R10	150K				R21	22K			
R11	270K				R22	22K 2W			
R12	270K				R23	10K 1W			
R13	3300Ω				R24	330Ω 2W			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		HEATH PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Trap	D-45-49 *					* L1 thru L7 may be ordered as a set (Part # 141-1).
L2	Ant.	V-40-186 *					
L3	Osc.	V-40-186 *					
L4	RF Choke	45-26 * ①					① Wound on 3300Ω.
L5	RF Choke (75MH)	45-48 *					
L6	Osc. Plate	V-40-186 *					
L7	Final Plate	V-40-187 *					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ .34A	100V Ⓐ .200A AC	6.3V Ⓐ 1.9A	54-87					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HEATH PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	6700Ω Tap Ⓐ 12%	3-4Ω	51-43		A-3817			

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HEATH PART No.	QUAM PART No.	
SP1	3½"	PM	3-4Ω	401-21	3A07	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	HEATH PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.055A	57-23	1N1763	2F4	SR200	
M2	.055A	57-23	1N1763	2F4	SR200	

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			HEATH PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M3	3AG	1½A 250V			31201.5 (3AG 1½A 250V)	342001	AGC 1½	HKP

MISCELLANEOUS

ITEM No.	PART NAME	HEATH PART No.	NOTES
M4	Tuning Cap.	25-56	Receiver
M5	Crystal	404-14	Channel 1
	Crystal	404-15	Channel 2
	Crystal	404-16	Channel 3
	Crystal	404-17	Channel 4
	Crystal	404-18	Channel 5
	Crystal	404-19	Channel 6
	Crystal	404-20	Channel 7
	Crystal	404-21	Channel 8
	Crystal	404-22	Channel 9
	Crystal	404-23	Channel 10
	Crystal	404-24	Channel 11
	Crystal	404-25	Channel 12
	Crystal	404-26	Channel 13
	Crystal	404-27	Channel 14
	Crystal	404-28	Channel 15
	Crystal	404-29	Channel 16
	Crystal	404-30	Channel 17
	Crystal	404-31	Channel 18
	Crystal	404-32	Channel 19
	Crystal	404-33	Channel 20
	Crystal	404-34	Channel 21
	Crystal	404-35	Channel 22
	Crystal	404-36	Channel 23
M6	Switch	63-210	Function (Rotary Type)
	Microphone	480-8	

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	462-85	Volume, Tuning
Knob	462-86	Function Selector
Handle	211-16	Plastic
Cabinet	90-111	

WIRING DATA

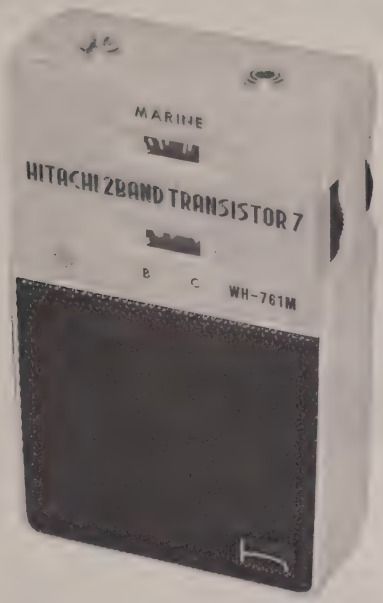
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

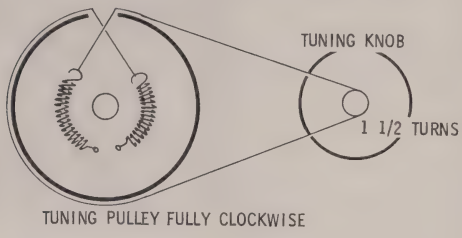
PHOTOFACT® Folder with CIRCUITRACE®

HITACHI MODELS WH-761M

HITACHI MODELS
WH-761M



DRIVE CORD STRINGING



FRONT VIEW

TRADE NAME	Hitachi Model WH-761M
IMPORTER	Electronic Utilities Co., Div. of the Sampson Co., 2244 S. Western Ave., Chicago 8, Illinois
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver
POWER SUPPLY	9 Volts DC — RATING 5MA @ 9 Volts DC (No Signal, Min. Volume); 15MA @ 9 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	535-1605KC — SHORT WAVE 1.6-4.5MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3, A5.....GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A4, A7, A8, A11, A12, A15.GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A9, A10, A13, A14.....GENERAL CEMENT #9440

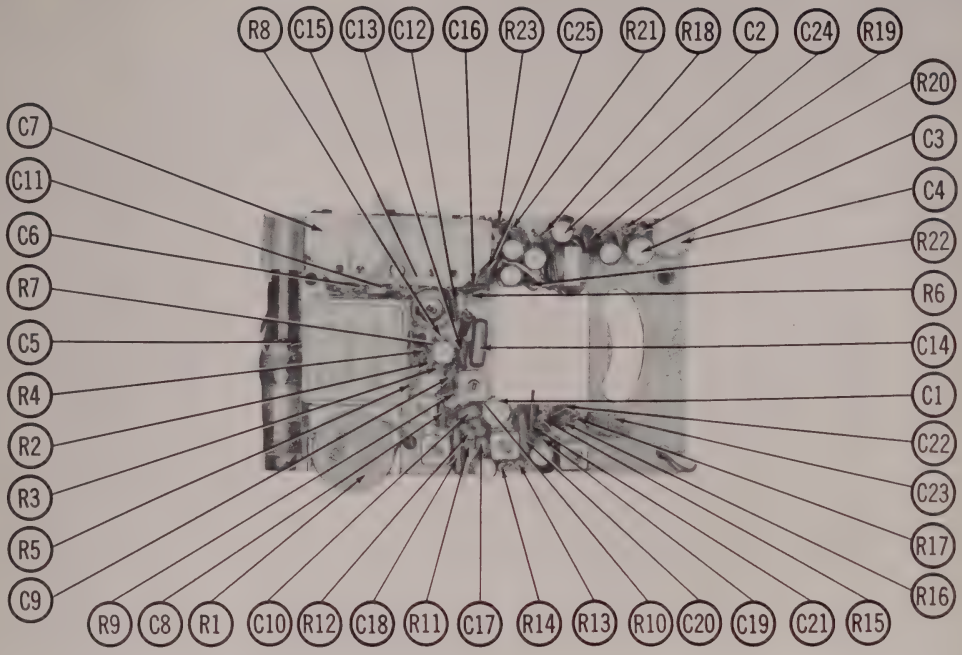
	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400% Mod.)	(BC) Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5, A6	"
4.	"	1400KC	1400KC Signal	"	A7	"
5.	High side to antenna jack. Low side to chassis.	4.5MC (400% Mod.)	(MB) 4.5MC	Across voice coil.	A8	Adjust for maximum output.
6.	"	1.6MC	1.6MC	"	A9, A10	"
7.	"	4.0MC	4.0MC	"	A11	"

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

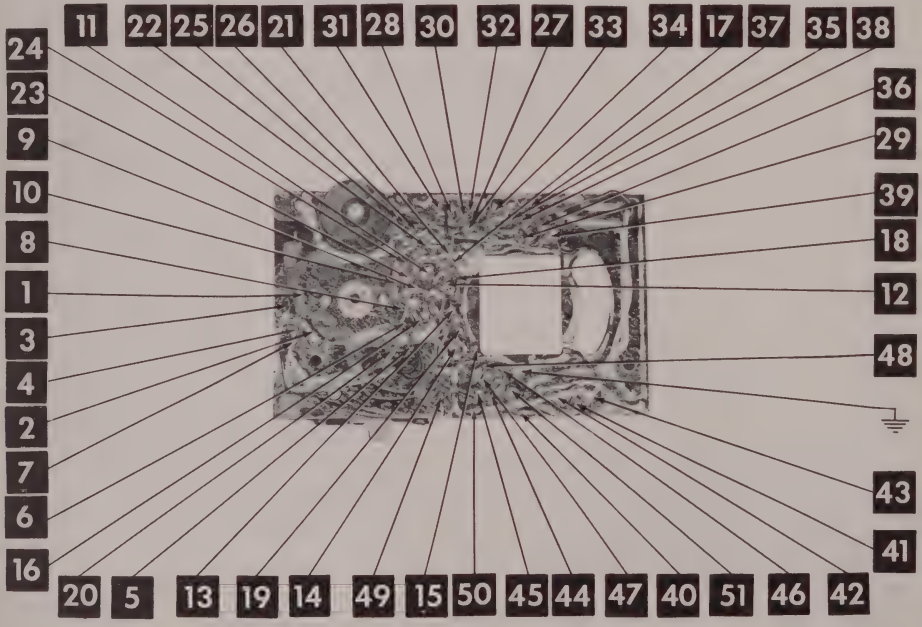
The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KF590

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

SET 542 FOLDER 7



CHASSIS TOP VIEW – CAPACITOR & RESISTOR IDENT.



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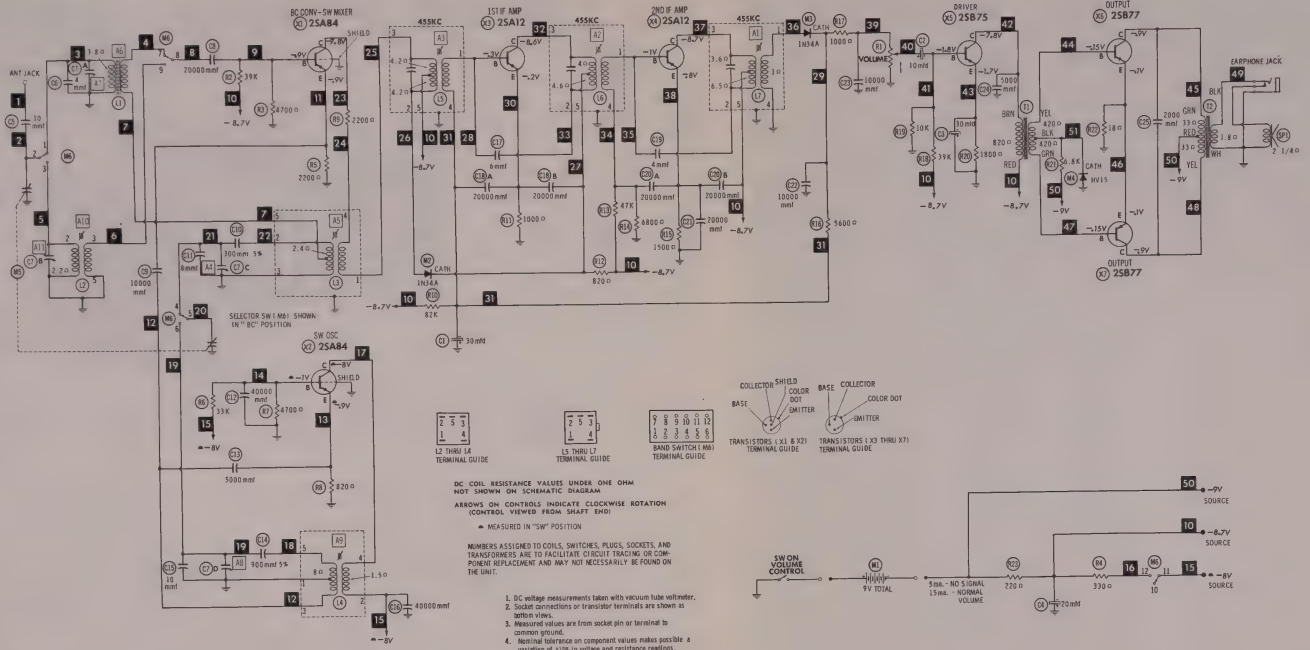

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

▲ MEASURED IN "SW" POSITION

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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HITACHI MODEL WH-761M

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SA84	BC Converter-SW Mixer				PNP
X2	2SA84	SW Oscillator				PNP
X3	2SA12	1st IF Amplifier				PNP
X4	2SA12	2nd IF Amplifier				PNP
X5	2SB75	Driver	2N406			PNP
X6	2SB77	Output	2N408			PNP
X7	2SB77	Output	2N408			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	HITACHI PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	30	3		BCD3025	NLW35-3	TT6X30	MLV30-6	TE-1092	
C2	10	3		BCD3010	NLW10-6	TT3X10	MLV10-3	TE-1053	
C3	30	3		BCD3025	NLW35-3	TT6X30	MLV30-6	TE-1092	
C4	20	10		BCD10025	NLW20-15	TT15X20	MLV20-12	TE-1130	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	10		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-V10
C6	4				C10V4C			10TCC-V39
C7A								
B								
C								
D								
C8	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C9	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C10	300 5%							
C11	8		NPO-SI 8.2		C10V82C			10TCC-V82
C12	40000							
C13	5000		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C14	900							
C15	10		NPO-SI 10	TCZ-10	C10Q1C	CCTO-100	CNO-410	10TCC-V10
C16	40000							
C17	6				C10V6C			

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C18A	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
B	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C19	4				C10V4C			10TCC-V39
C20A	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
B	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C21	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C22	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C23	10000		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C24	5000		C80V502AM	DM-502	H-05S2	CCD-502	TA-250	TG-D50
C25	20000		C80V203AM	DA-203	H-05S2		TA-120	TG-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	HITACHI PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/4						Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	39K				R13	47K			
R3	4700Ω				R14	6800Ω			
R4	330Ω				R15	1500Ω			
R5	2200Ω				R16	5600Ω			
R6	33K				R17	1000Ω			
R7	4700Ω				R18	39K			
R8	820Ω				R19	10K			
R9	2200Ω				R20	1800Ω			
R10	82K				R21	6800Ω			
R11	1000Ω				R22	18Ω			
R12	820Ω				R23	220Ω			

PARTS LIST AND DESCRIPTIONS (Continued)

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		HITACHI PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Loopstick						
L2	SW Ant.						
L3	BC Osc.						
L4	SW Osc.						
L5	1st IF						
L6	2nd IF						
L7	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HITACHI PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	CT-70					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	HITACHI PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2000Ω CT	8-10Ω	OT722					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	HITACHI PART No.	QUAM PART No.	
SP1	2 1/4"	PM	8-10Ω	SP-2302	22A06Z8	

BATTERIES

ITEM No.	VOLTAGE	HITACHI PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	9V	006P				216		M-1604	

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		HITACHI PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N34A			1N34A	1N34A	Overload
M3	1N34A			1N34A	1N34A	Detector
M4	HV15					Output Bias Regulator

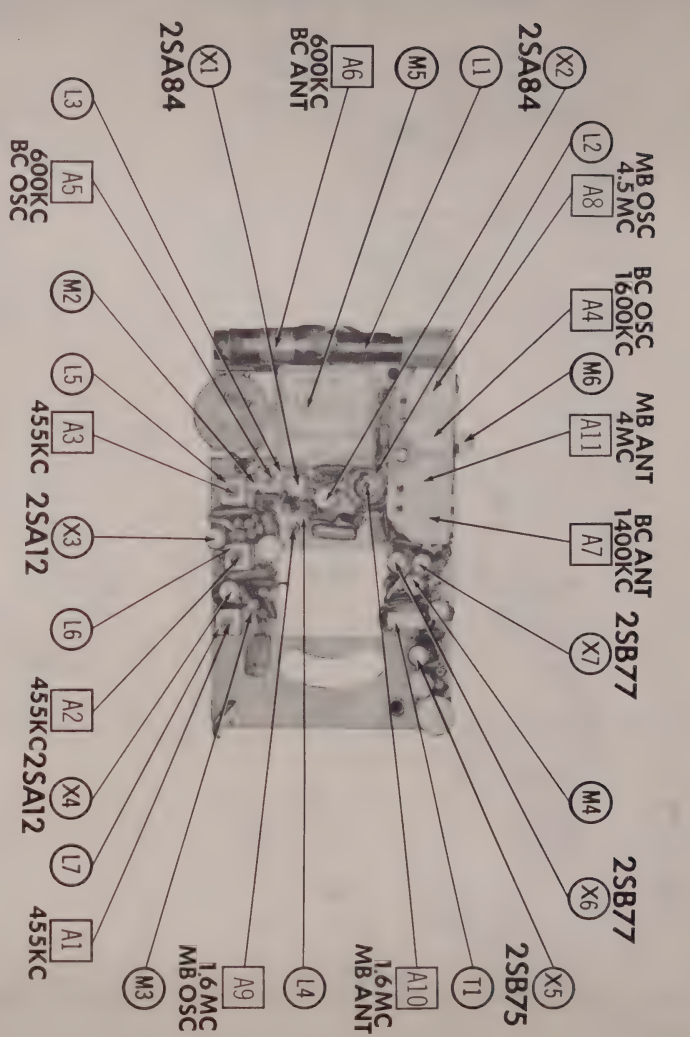
MISCELLANEOUS

ITEM No.	PART NAME	HITACHI PART No.	NOTES
M5	Tuning Cap.		2 Gang
M6	Switch		Band Selector (Slide Type)

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire ..... Use BELDEN No. 8885
Bonding Strap ..... Use BELDEN No. 8661

CHASSIS—TOP VIEW

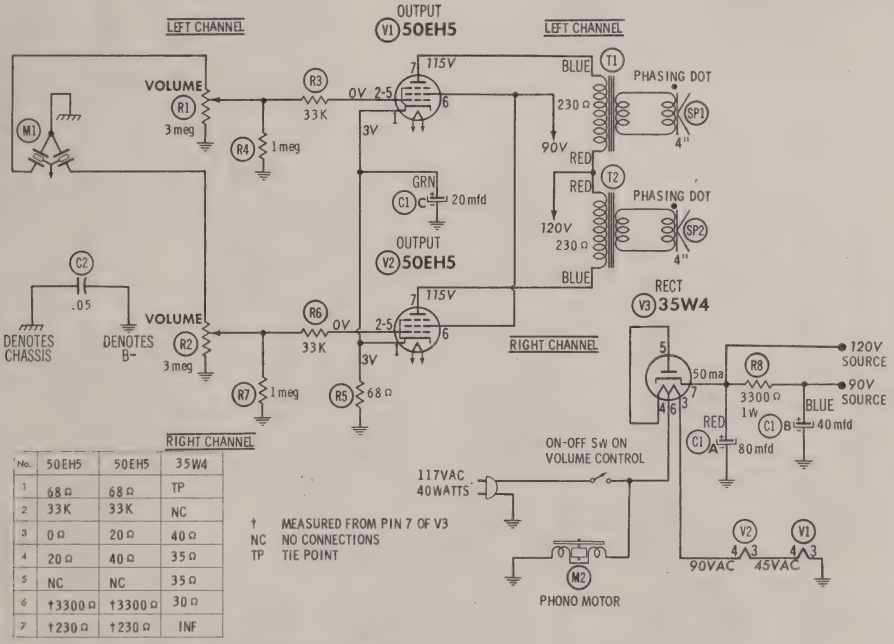


PHOTOFACT® Folder

MOTOROLA MODELS SF13B, SF13R (Ch. HS-871)

MODEL SF13R

TRADE NAME	Motorola Models SF13B, SF13R (Ch. HS-871
MANUFACTURER	Motorola Inc., 4545 W. Augusta Blvd., Chicago 51, Illinois
TYPE SET	AC Operated 3 Tube Stereo Phono Amplifier With 4 Speed Manual Record Player
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 40 Watts, .42 Amp. @117 Volts AC



RIGHT CHANNEL

No.	50EH5	50EH5	35W4
1	68Ω	68Ω	TP
2	33K	33K	NC
3	0Ω	20Ω	40Ω
4	20Ω	40Ω	35Ω
5	NC	NC	35Ω
6	†3300Ω	†3300Ω	30Ω
7	†230Ω	†230Ω	INF

† MEASURED FROM PIN 7 OF V3
NC NO CONNECTIONS
TP TIE POINT

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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KR641

MOTOROLA MODELS SF13B, SF13R (Ch. HS-871)
MOTOROLA MODELS SF13B, SF13R (Ch. HS-871)
SET 542 FOLDER 8

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •

ITEM No.	USE	TYPE
V1	Left Channel Output	50EH5
V2	Right Channel Output	50EH5
V3	Rectifier	35W4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA MOTOROLA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	23P60015A04	PRS4650	BBRT8415C	TCT3117	TDLT-7	TVA-3437.1	
B	40	150							
C	20	25							

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	.05 400V		P488N-05	DF-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA MOTOROLA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	3meg	½	18P60015A07	B-85	A47-3meg-Z	Q13-140	U57	Volume, Left Channel
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	
C	Switch			KR-1	SWE-12	76-1	US-26	Power Off-On
R2A	3meg	½	18P60015A06	B-85	A47-3meg-Z	Q13-140	U57	Volume, Right Channel
B	Shaft			Not Req.	KSS-3	Not Req.	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	33K			
R4	1meg			
R5	68Ω			
R6	33K			
R7	1meg			
R8	3300Ω 1W			

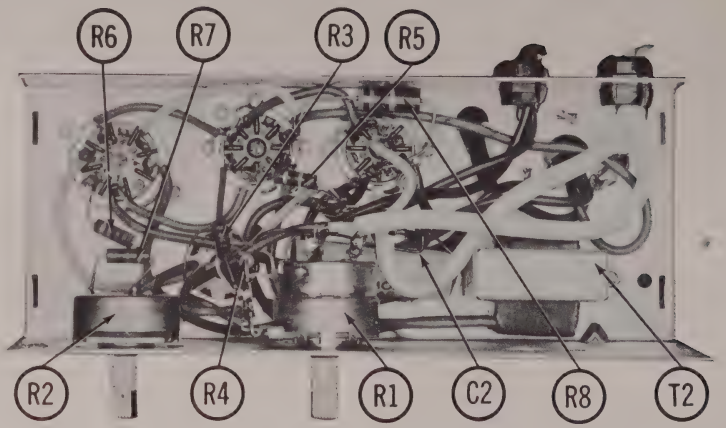
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE PRI.	IMPEDANCE SEC.	REPLACEMENT DATA MOTOROLA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	2500Ω	3-4Ω	25P60015A08	A-3025	A-3332	26S58	S-12Z	
T2	2500Ω	3-4Ω	25P60015A08	A-3025	A-3332	26S58	S-12Z	

SPEAKER

ITEM No.	TYPE SIZE	TYPE FIELD	TYPE V. C. IMP.	REPLACEMENT DATA MOTOROLA PART No.	QUAM PART No.	NOTES
SP1	4"	PM	3-4Ω	50P60015A05	4A07	
SP2	4"	PM	3-4Ω	50P60015A05	4A07	

CHASSIS—BOTTOM VIEW



PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	MOTOROLA PART No. CARTRIDGE	MOTOROLA PART No. NEEDLE*	ASTATIC PART No. CARTRIDGE	ASTATIC PART No. NEEDLE*	ELECTRO-VOICE PART No. CARTRIDGE	ELECTRO-VOICE PART No. NEEDLE*	SONOTONE PART No. CARTRIDGE	SONOTONE PART No. NEEDLE*	NOTES
M1	59P60015A03	47P60015A01* (LP)	74-TS KR-74-TS ①	N8-7 *	96T	Not Req.	12TH-S T8C1-12TH-S ①	Not Req.	①Includes Tone Arm.
		47P60015A02* (78RPM)		N8-3 *					

MISCELLANEOUS

ITEM No.	PART NAME	MOTOROLA PART No.	NOTES
M2	Motor Idler Wheel	59P60015A20	Less Turntable & Mounting Plate WALSCO Part No. 1472-01

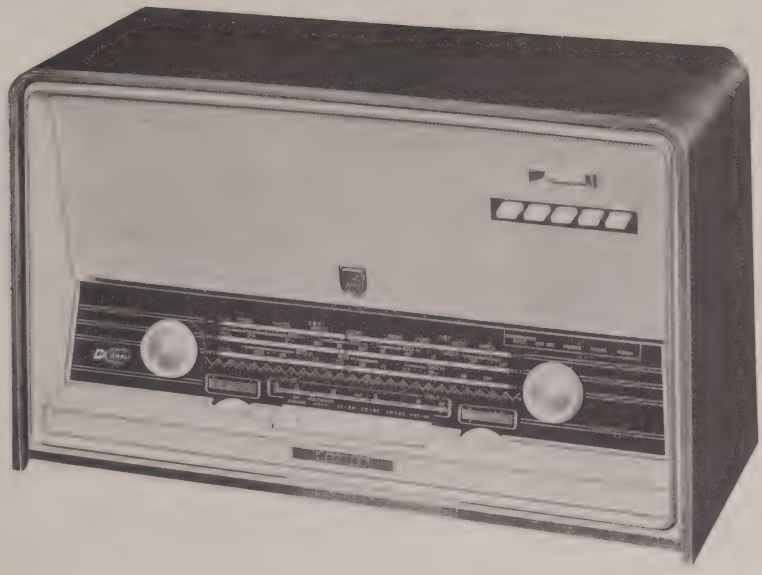
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	36P60015A35	Volume
Knob	36P60015A19	Speed Selector
Cabinet	16P60015A23	Blue, Model SF13B
Cabinet	16P60015A24	Red, Model SF13R
Handle	55P60015A30	Carrying

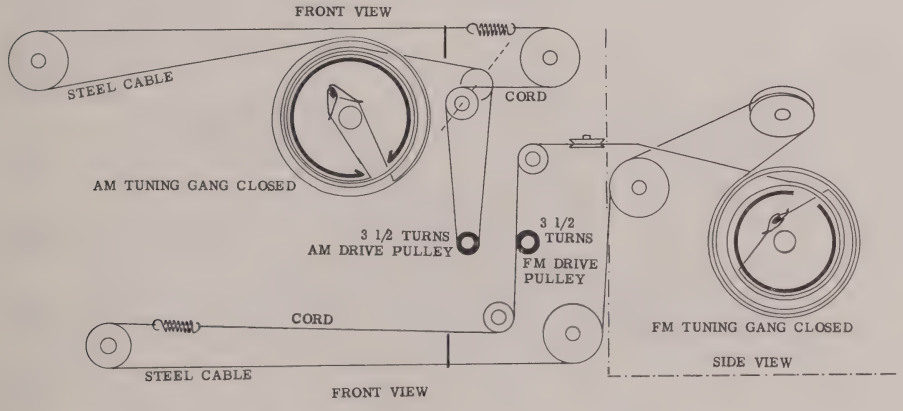
PHOTOFACT® Folder

NORELCO MODEL B5X98A



TRADE NAME	Norelco Model B5X98A		
SUPPLIER	North American Philips Co., Inc., 100 E. 42nd Street, New York 17, N. Y.		
TYPE SET	AC Operated 9 Tube FM-BC-SW Receiver		
POWER SUPPLY	90/110/127/145/190/220 Volts AC, 60 Cycles	RATING	64 Watts, .6 Amp. @117 Volts AC (110V Tap)
TUNING RANGE—BROADCAST	517—1622KC	SHORT WAVE 2	7.3—15.8MC
FREQ. MOD.	88 — 108MC	SHORT WAVE 3	3.2—7.5MC

DIAL CORD STRINGING



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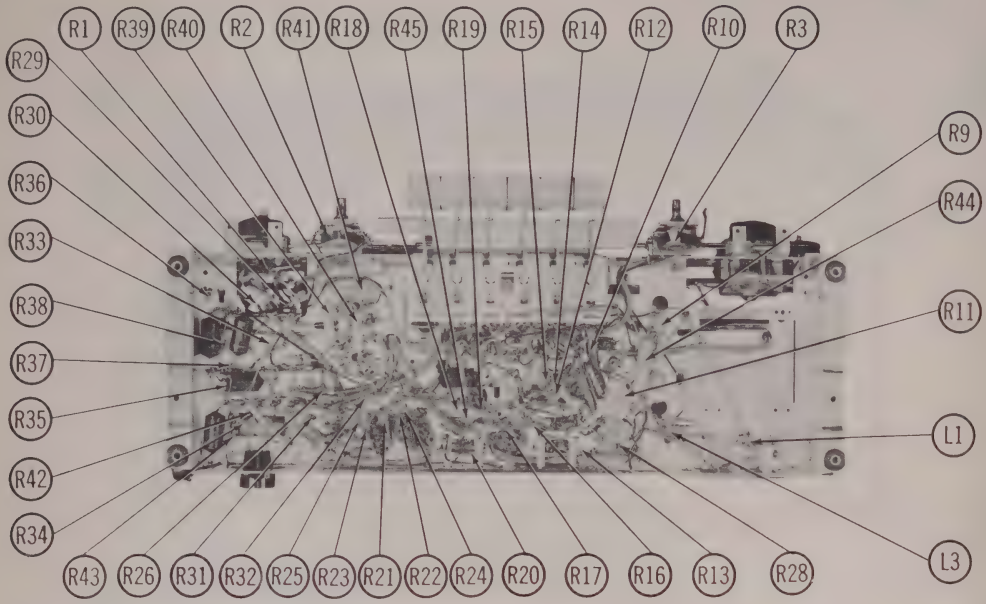
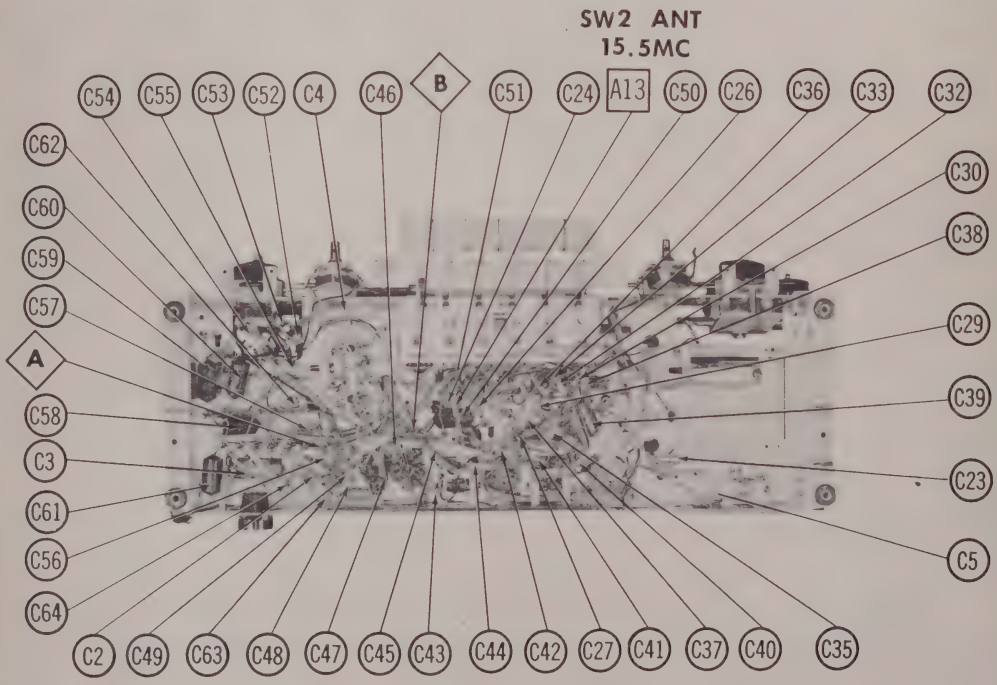
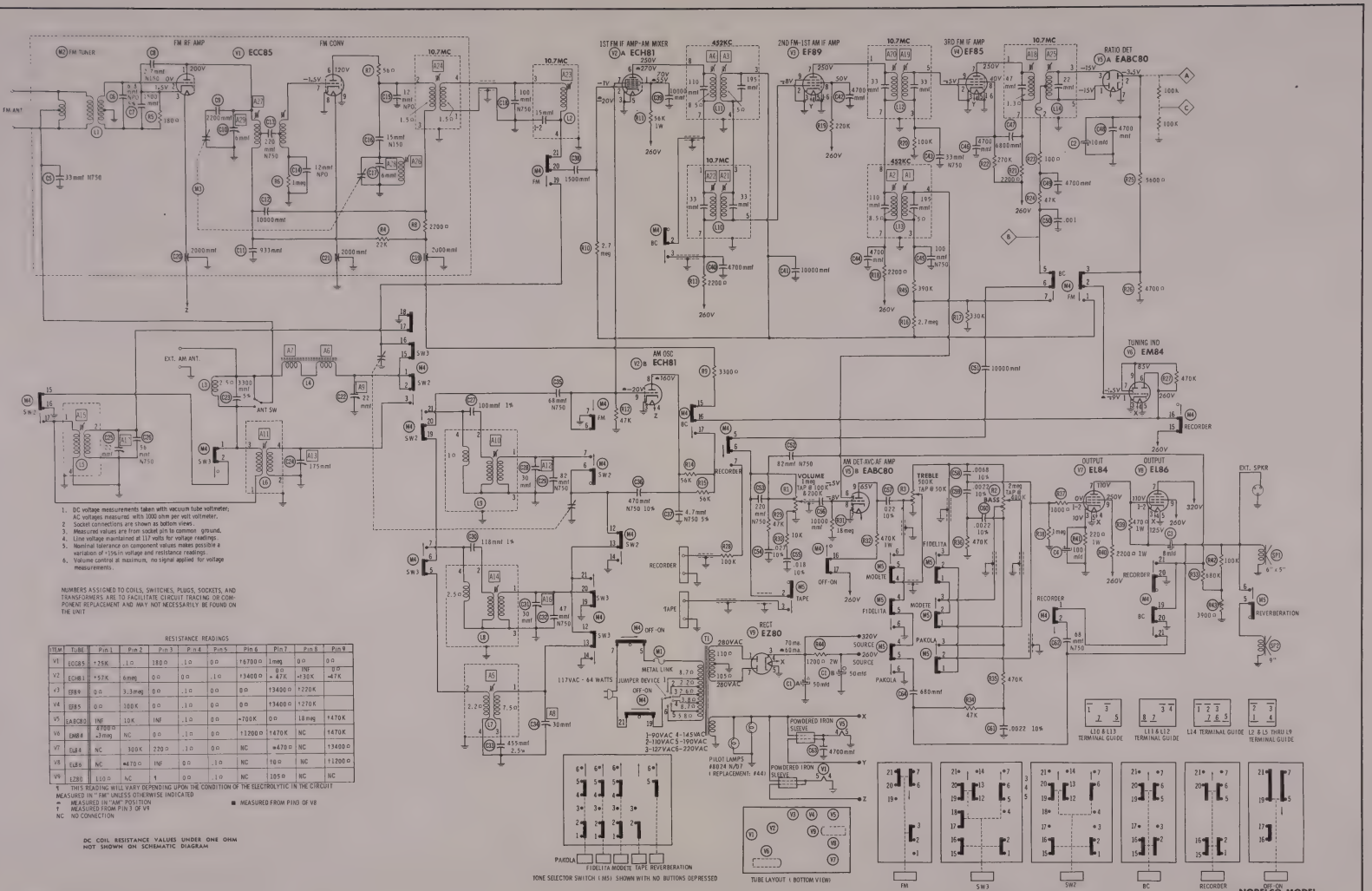
NORELCO MODEL B5X98A
NORELCO MODEL B5X98A
SET 542 FOLDER 9



CHASSIS BOTTOM VIEW-RESISTOR & INDUCTOR IDENT.



CHASSIS BOTTOM VIEW-ALIGNMENT & CAPACITOR IDENT.



1. DC voltage measurements taken with vacuum tube voltmeter, AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC85	¶75K	1Ω	180Ω	0Ω		¶6700Ω	1meg	0Ω	0Ω
V2	ECH81	¶57K	6meg	0Ω	0Ω	1Ω	¶3400Ω	0Ω + 47K	INF ¶130K	0Ω ¶47K
V3	EF89	0Ω	3.3meg	0Ω	1Ω	0Ω	0Ω	¶3400Ω	¶220K	
V4	EF85	0Ω	100K	0Ω	1Ω	0Ω	0Ω	¶3400Ω	¶270K	
V5	EABC80	INF	10K	INF	1Ω	0Ω	¶700K	0Ω	18meg	¶470K
V6	EM84	4700Ω ¶3meg	NC	0Ω	1Ω	0Ω	¶1200Ω	¶470K	NC	¶470K
V7	EL84	NC	300K	220Ω	1Ω	0Ω	NC	¶470Ω	NC	¶3400Ω
V8	EL86	NC	¶470Ω	INF	0Ω	1Ω	NC	70Ω	NC	¶1200Ω
V9	EZ80	110Ω	NC	¶	0Ω	1Ω	NC	105Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
MEASURED IN "FM" UNLESS OTHERWISE INDICATED
— MEASURED IN "AM" POSITION
† MEASURED FROM PIN 3 OF V9
NC NO CONNECTION
■ MEASURED FROM PINS OF V8

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

PAKOLA FIDELITA MODETTE TAPE REVERBERATION
TONE SELECTOR SWITCH (M5) SHOWN WITH NO BUTTONS DEPRESSED

TUBE LAYOUT (BOTTOM VIEW)

PUSHBUTTON SELECTOR SWITCH (M4) SHOWN IN "FM" POSITION.

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ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Use only enough generator output to provide a usable indication.
Suggested Alignment Tools:
A1 thru A4..... GENERAL CEMENT #8721, 8722
WALSCO #2519

A5, A10, A11, A14, A15, A18 thru A25..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

A9, A17, A26, A27..... GENERAL CEMENT #5003, 8271, 8275, 8276, 8609, 8721, 8722, 9150, 9298
WALSCO #2516, 2518, 2519

AM ALIGNMENT

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 2 (grid) of AM Mixer. Low side to chassis.	452KC (400~ 30% AM)	(BC) Tuning gang fully open.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Loop	550KC	550KC	"	A5, A6, A7	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	1500KC	1500KC	"	A8, A9	"
4.	High side thru .01mfd to external antenna terminal. Low side to chassis.	7.5MC	(SW-2) 7.5MC	"	A10, A11	"
5.	"	15.5MC	15.5MC	"	A12, A13	"
6.	"	3.34MC	(SW-3) 3.34MC	"	A14, A15	"
7.	"	7.4MC	7.4MC	"	A16, A17	"

FM IF ALIGNMENT USING AM SIGNAL GENERATOR AND VTVM— SELECTOR IN FM POSITION

Connect Two matched 100K (±1%) resistors in series from point ◇A◇ to chassis. The junction of these two resistors is alignment point ◇C◇ as shown on the schematic.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
8.	Across FM antenna terminals.	10.7MC (Unmod.)	(FM) Point of non-interference.	DC probe to point ◇A◇. Common to chassis.	A18, A19, A20, A21, A22, A23, A24	Adjust for maximum deflection.
9.	"	"	"	DC probe to point ◇B◇. Common to Point ◇C◇.	A25	Adjust for zero reading. A positive and negative reading will be obtained on either side of the correct setting.

FM IF ALIGNMENT USING FM SIGNAL GENERATOR AND OSCILLOSCOPE — SELECTOR IN FM POSITION

Use frequency modulated signal with 60~ modulation and 450KC sweep. Use 120~ sawtooth voltage in scope for horizontal deflection.

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT SCOPE	ADJUST	REMARKS
8.	Across FM antenna terminals.	10.7MC (450KC Swp)	(FM) Point of non-interference.	Vert. amp. to point ◇A◇. Low side to chassis.	A18, A19, A20, A21, A22, A23, A24	Disconnect Stabilizing Capacitor C2. Adjust for maximum gain and symmetry of response similar to Fig. 1 with markers as shown. Reconnect C2.
9.	"	"	"	Vert. amp. to point ◇B◇. Low side to chassis.	A25	Adjust to place marker at the center of crossover lines similar to Fig. 2. SLIGHTLY retouch A18 for maximum amplitude and straightness of cross-over lines.

FM RF ALIGNMENT — SELECTOR IN FM POSITION

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	CONNECT VTVM	ADJUST	REMARKS
10.	Across FM antenna terminals.	87.5MC	(FM) 87.5MC	DC probe to point ◇A◇. Common to chassis.	A26, A27	Adjust for maximum deflection.
11.	"	108MC	108MC	"	A28, A29	"

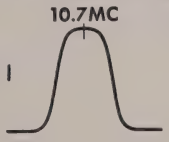


FIG. 1

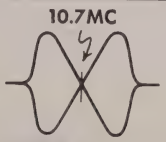
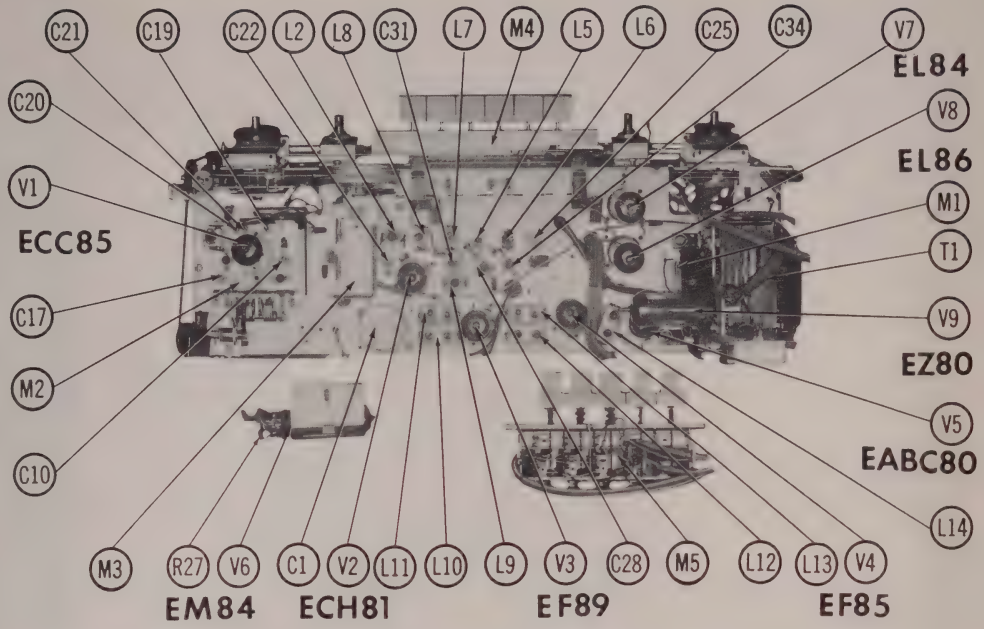


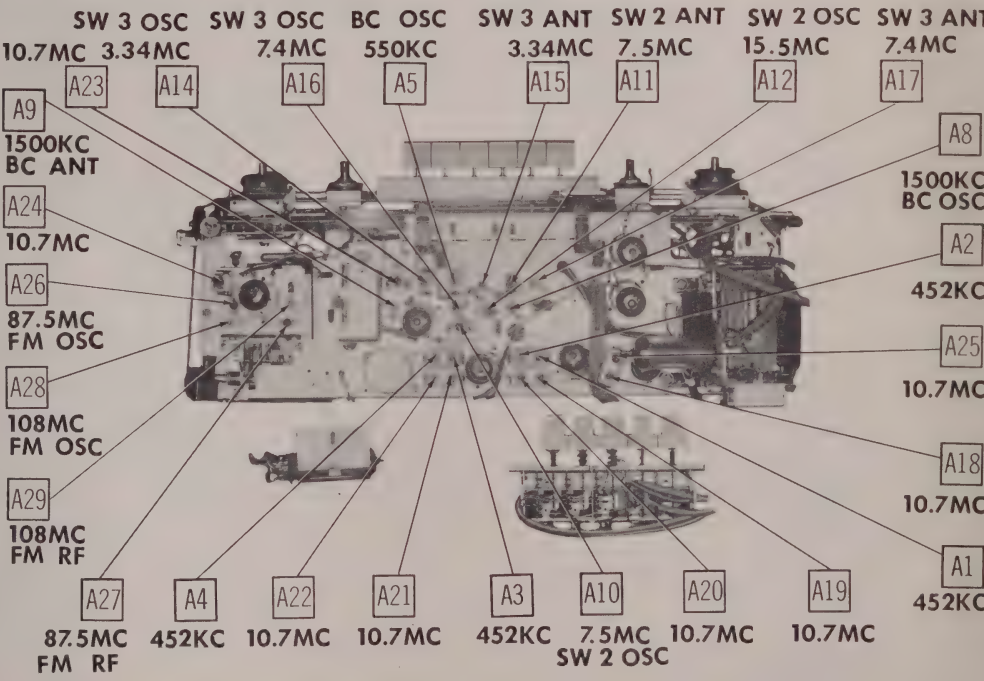
FIG. 2

NORELCO MODEL B5X98A

FOLDER 9



CHASSIS-TOP VIEW



CHASSIS-TOP VIEW

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	FM RF Amp. -FM Conv.	ECC85	V6	Tuning Indicator	EM84
V2	1st FM IF Amplifier AM Mixer-AM Osc.	ECH81	V7	Output	EL84
V3	2nd FM-1st AM IF Amp.	EF89	V8	Output	EL86
V4	3rd FM IF Amplifier	EF85	V9	Rectifier	EZ80
V5	Ratio Detector-AM-Det. - AVC-AF Amp.	EABC80			

ELECTROLYTIC CAPACITORS

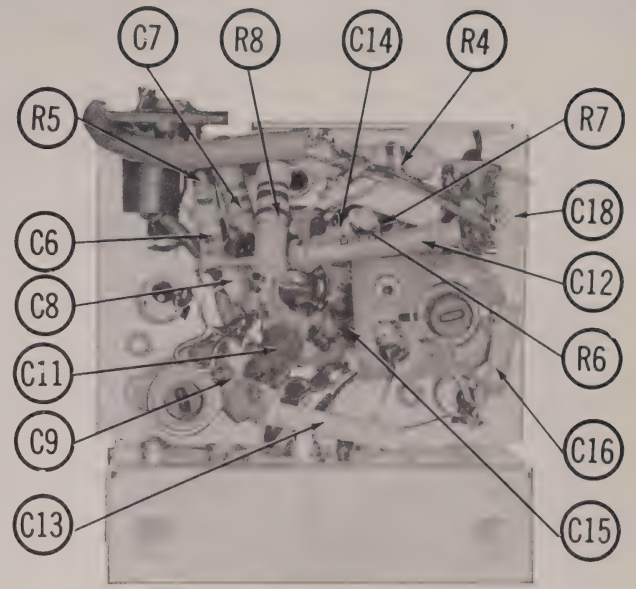
ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	NORELCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲50	350	913/P50-50	PRS2430	BBRD4445	TCD78	TDLD-31	TVA-2740	
B	▲50	350							
C2	10	70	909/E10	PRS1410	BBR10-90	TC42	TD-10-150	TVA-1406	
C3	8	300	911/L8	PRS1610	BR835	TC61	TD-8-350	TVA-1603	
C4	100	12	909/B100	PRS1150	BBR100-15	TC2501	TD-100-15	TVA-1130	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	33 N750		N750-SI 33	TCN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C6	6.8 NPO 5%		NPO-SI 6.8	TCZ-6R8	C10V68C	CCTO-6R8	CNO-568	10TCC-V68
C7	1500		SI 1500	D6-152	BYA10D15	CCD-152 *	B-215	5HK-D15
C8	2.7 N150							
C9	2200		SI 2200	D6-222	BYA10D22	CCD-222	B-222	5HK-D22
C10	6							
C11	933		SI 910	DD-911	LI0T91			
C12	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C13	220 N750		N750-SI 220	TCZ-222	C10T33U	CCTN-221	CN7-322	10TCU-T22
C14	12 NPO		NPO-SI 12	TCZ-12	C10Q12C	CCTO-120	CNO-412	10TCC-Q12
C15	12 NPO		NPO-SI 12	TCZ-12	C10Q12C	CCTO-120 *	CNO-412	10TCC-Q12 10TCP-Q15
C16	15 N150							
C17	6							
C18	100 N750		N750-SI 100	TCN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C19	2000		EF-001	MFT-1000		CCF-102	CT280A	
C20	2000		EF-001	MFT-1000		CCD-102	CT280A	
C21	2000		EF-001	MFT-1000		CCF-102	CT280A	
C22	22							
C23	3300 5%				1R5D33	CM-20B-332J	MCJ462	MS-233
C24	175							
C25	22							
C26	56 N750		N750-SI 56	TCN-56	C10Q56U	CCTN-560	CN7-456	10TCU-Q56
C27	100 1%					CM-15E-101F		
C28	30							
C29	82 N750		N750-SI 82	TCN-82	C10Q82U	CCTN-820	CN7-482	10TCU-Q82
C30	118 1%							
C31	30							
C32	47 N750		N750-SI 47	TCN-47	C10Q47U	CCTN-470	CN7-447	10TCU-Q47
C33	455 2.5%							
C34	30							
C35	68 N750		N750-SI 68	TCN-68	C10Q68U	CCTN-680	CN7-468	10TCU-Q68
C36	470 N750 10%		N750-SI 470	TCN-470				10TCU-T47
C37	4.7 N750 5%		N750-SI 5.0	TCN-5	C10V5U	CCTN-050	CN7-547	10TCU-V50
C38	1500		SI 1500	D6-152	BYA10D15	CCD-152	B-215	5HK-D15
C39	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C40	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C41	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C42	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C43	33 N750		N750-SI 33	TCN-33	C10Q33U	CCTN-330	CN7-433	10TCU-Q33
C44	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C45	100 N750		N750-SI 100	TCN-100	C10T1U	CCTN-101	CN7-310	10TCU-T10
C46	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47

FM RF SUBCHASSIS



FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C47	6800		SI 6800	D6-682	BYA10D68M	CCD-682	B-268	5HK-D68
C48	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C49	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C50	.001 400V		P488N-001	D6-102	CUB6D1	6DP-1-102	GEM-621	6TM-D10
C51	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C52	82 N750		N750-SI 82	TCN-82	C10Q82U	CCTN-820	CN7-482	10TCU-Q82
C53	220 N750		N750-SI 220	TCN-220	C10T22U	CCTN-221	CN7-322	10TCU-T22
C54	.027 400V 10%		P684CM-027		DPMS6S27	6DP-3-273	GEM-1613	6PS-S27
C55	.018 125V 10%		P684CM-018		DPMS6S2	6DP-2-203	GEM-1612	2TM-S20
C56	10000		SI 10000	D6-103	BYA10S1	CCD-103	B-110	5HK-S10
C57	.022 400V 10%		V84C4S22-10%		PM4S22	4DP-2-223	GEM-1612	4TM-S22
C58	.0068 400V 10%		V84C4D68-10%		PM6D68	6DP-1-682	GEM-1626B	6TM-D68
C59	.0022 400V 10%		V84C4D22-10%		PM6D22	6DP-1-222	GP222	6TM-D22
C60	.0022 400V 10%		V84C4D22-10%		PM6D22	6DP-1-222	GP222	6TM-D22

PARTS LIST AND DESCRIPTIONS (Continued)

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C61	.0022 400V 10%		V84C4D22-10%		PM6D22	6DP-1-222	GP222	6TM-D22
C62	68 N750		N750-SI 68	TCN-68	C10Q68U	CCTN-680	CNO-468	10TCC-Q68
C63	4700		SI 4700	D6-472	BYA10D47M	CCD-472	B-247	5HK-D47
C64	680		SI 680	D6-681	BYA10T68	CCD-681	B-368	10TS-T68

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	NORELCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg*	½	B163953	ABT-164				Volume
B	Shaft			AK-29				
R2	2meg	½	916/EL400K+					Bass
	400K Tap		1M6					
R3	500K	½	916/DL50K+					Treble
	50K Tap		450K					

* Taps Ⓐ100K, 200K.

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	22K				R25	5600Ω			
R5	180Ω				R26	4700Ω			
R6	1meg				R27	470K			
R7	56Ω				R28	100K			
R8	2200Ω				R29	47K			
R9	3300Ω				R30	10K			
R10	2.7meg				R31	18meg			
R11	56K 1W				R32	470K 1W			
R12	47K				R33	680K			
R13	2200Ω				R34	47K			
R14	56K				R35	470K			
R15	56K				R36	470K			
R16	2.7meg				R37	1000Ω			
R17	330K				R38	1meg			
R18	2200Ω				R39	470Ω 1W			
R19	220K				R40	2200Ω 1W			
R20	100K				R41	220Ω 1W			
R21	2200Ω				R42	100K			
R22	270K				R43	3900Ω			
R23	100Ω				R44	1200Ω 2W			
R24	47K				R45	390K			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		NORELCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	FM Ant.	WE11061					
L2	2nd FM IF	A312783					
L3	RF Choke	A380361					
L4	Loopstick	922/01	BC-419	705-A		T532	
L5	SW 2 Ant.	921/30-90M					
L6	SW 3 Ant.	921/11-20M					
L7	BC Osc.	923U/185-590M					
L8	SW 2 Osc.	A312732					
L9	SW 3 Osc.	923/10-20M					
L10	3rd FM IF	926/10.7					
L11	1st AM IF	925/452					
L12	4th FM IF	926/10.7					
L13	2nd AM IF	925/452					
L14	Ratio Detector	926/10.7RD					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	NORELCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	220V Tap Ⓐ190V, 145V, 127V, 110V, 90V (110V Tap) 117VⒶ .6A	560VCT Ⓐ .070A DC	6.3VⒶ 4.3A	919/290X110①					① Includes M1

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	NORELCO PART No.	QUAM PART No.	
SP1	6"x 9"	PM	640-660Ω	AD3690AM		
SP2	5"	PM	640-660Ω	AD3500AE		

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			NORELCO PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	Metal Link		0810099					

MISCELLANEOUS

ITEM No.	PART NAME	NORELCO PART No.	NOTES
M2	FM Tuner		
M3	Tuning Cap.	4900212	AM, 2 Gang
M4	Switch		Function Selector (Pushbutton Type)
M5	Switch		Tone (Pushbutton Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	A394010/021	S
Dial	A394010/031	OV
Knob	A378252	Tuning
Knob	P407765/417/UX	Bass, Treble
Pushbutton	P542023/139/KZ	Reverberation, Tape, Modeste, Fidelita, Parola
Pushbutton	P542026/139/FC	On-Off, Phono, BC, SW, SW, FM
Cabinet	A300711	

WIRING DATA

General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

PHILCO MODELS T-61BK, T-61IV, T-61TE, T-66AQ, T-66CR, T-66IV

PHILCO MODELS T-61BK, T-61IV, T-61TE, T-66AQ, T-66CR, T-66IV

MODEL T-66AQ

PHILCO MODELS T-61BK, T-61IV, T-61TE, T-66AQ, T-66CR, T-66IV

TRADE NAME	Philco Models T-61BK, T-61IV, T-61TE (Code 124) T-66AQ, T-66CR, T-66IV (Code 124, 126)
MANUFACTURER	Philco Corp., Tioga & C Streets, Philadelphia, Pa.
TYPE SET	Battery Operated Transistorized Portable AM Receiver
POWER SUPPLY	3 Volts DC RATING 10MA@3 Volts DC (No Signal, Min. Volume)
TUNING RANGE—BROADCAST	535 – 1620KC 20MA@3 Volts DC (Signal, Normal Volume)

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3... GENERAL CEMENT #8607, 9291, 9294
WALSCO #2520, 2522, 2523, 2524, 2534, 2537
A4, A6..... GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A5..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to antenna stator lug of tuning gang. Low side to B-.	455KC (400~ Mod.)	Tuning gang fully open.	Across voice coil.	A1, A2, A3	Adjust for maximum output.
2.	Loop	1620KC	"	"	A4	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
3.	"	600KC	600KC	"	A5	Adjust for maximum output while rocking tuning gang.
4.	"	1400KC	1400KC	"	A6	Adjust for maximum output. Repeat Steps 2, 3 and 4.

CHASSIS REMOVAL

1. Remove screw located near L4(2nd IF).
2. Depress clips on each side of cabinet.
3. Remove printed board.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KF604

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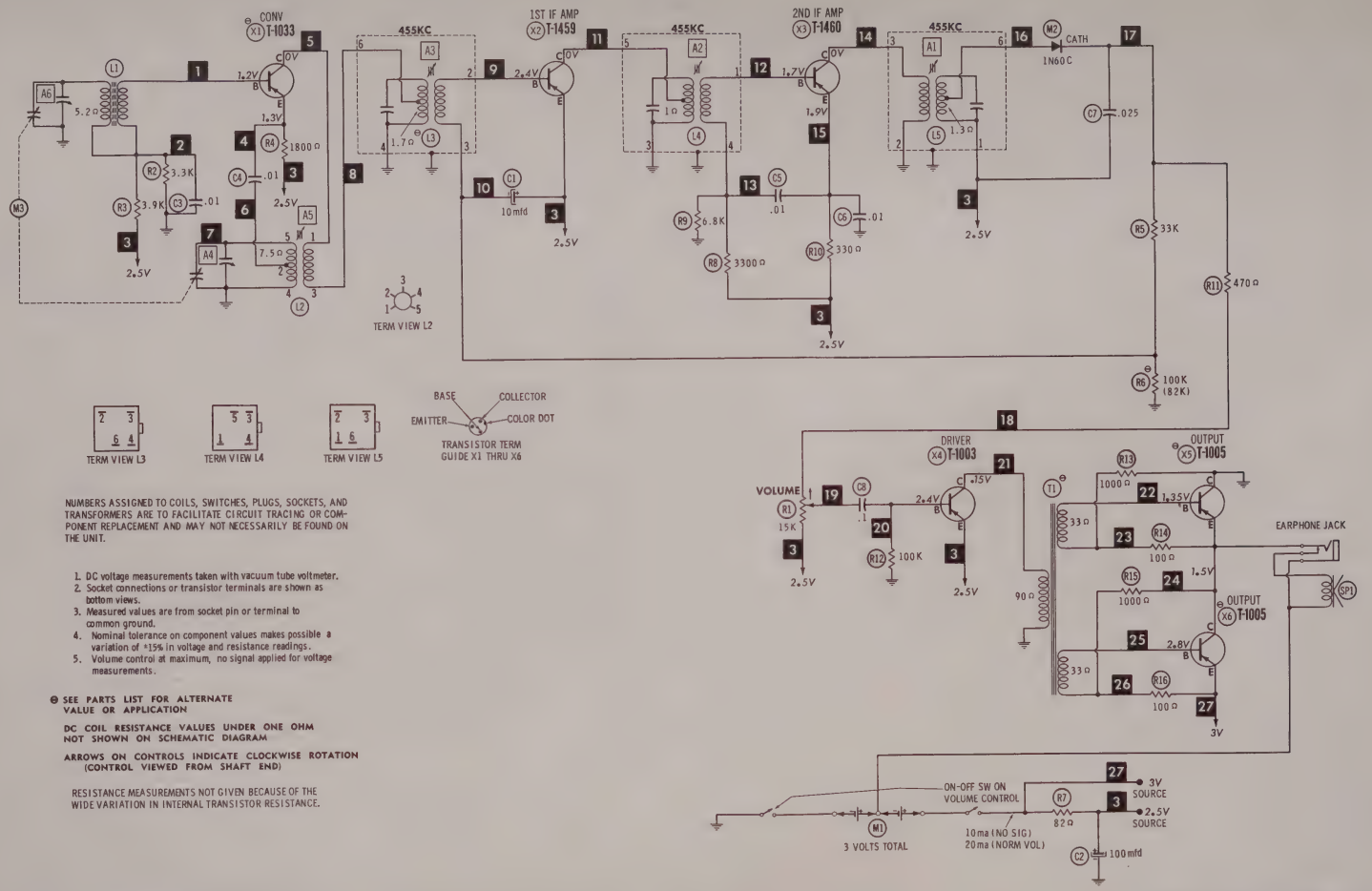
SET 542 FOLDER 10



NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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PHILCO MODELS T-61BK, T-61IV, T-61TE, T-66AQ, T-66CR, T-66IV

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
X1	T-1033①	Converter		2N486		PNP
X2	T-1459	1st IF Amplifier		2N483		PNP
X3	T-1460	2nd IF Amplifier				PNP
X4	T-1003	Driver				PNP
X5	T-1005	Output	2N408	2N631	2N408	PNP } Matched
	T-1009②	Output				PNP } Pair
X6	T-1005	Output	2N408	2N631	2N408	PNP } Matched
	T-1009②	Output				PNP } Pair

① T-66 Series Code 126 and T-61 Series use T-1877 in this application.
② Alternate.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PHILCO PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1	10	6	30-2591-3	PTT23	NLW10-6	TT6X10	MLV10-6	TE-1087	
C2	100	3	30-2588-2	PTT13	NLW100-3	TT6X100	MLV100-3	TE-1059.5	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C4	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C5	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C6	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C7	.025				H-05S25		TA-125	TG-S25
C8	.1. 10V		C80V104AM	UK10-104	H-05P1		TA-010	HY-320

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PHILCO PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	15K	1/4	33-5583-20					Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	3300Ω			
R3	3900Ω			
R4	1800Ω			
R5	33K			
R6	100K			(82K) *
R7	82Ω			
R8	3300Ω			
R9	6800Ω			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R10	330Ω			
R11	470Ω			
R12	100K			
R13	1000Ω			
R14	100Ω			
R15	1000Ω			
R16	100Ω			

* Used in T-61 Series.

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA PHILCO PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	NOTES
L1	Loopstick	76-10982-2					① Part #32-4800-2 used in Code 126. Part #32-4800-4 used in Models T-61.
L2	Osc.	32-4802-1					
L3	1st IF	32-4800-1 ①					
L4	2nd IF	32-4800-2					
L5	3rd IF	32-4800-3					

PRINTED BOARD

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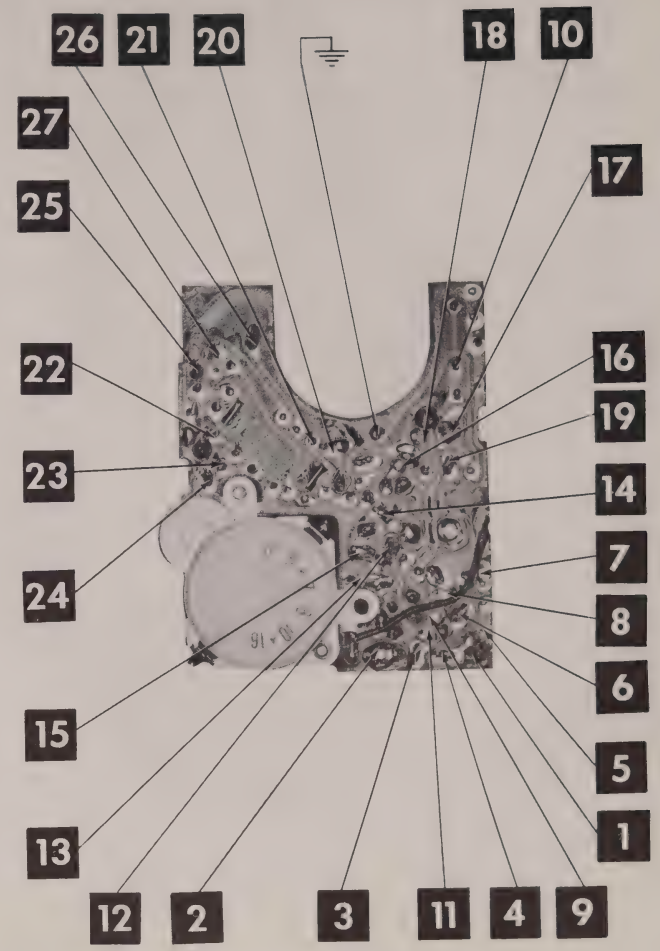


PHILCO MODELS T-61BK, T-61IV, T-61TE, T-66AG, T-66CR, T-66IV

FOLDER 10

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO PRI.	TURNS RATIO SEC.	REPLACEMENT DATA PHILCO PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	NOTES
T1	1.7	1 SEC. 1 SEC. 2 1	32-8959-1 ①					① Part #32-8959-3 used in Models T-61

SPEAKER

ITEM No.	TYPE SIZE	FIELD	V. C. IMP.	REPLACEMENT DATA PHILCO PART No.	QUAM PART No.	NOTES
SP1	2"	PM	6-8Ω	36-1690-1		

BATTERIES

ITEM No.	VOLTAGE	PHILCO PART No.	REPLACEMENT DATA BURGESS "A"	BURGESS "B"	EVEREADY "A"	EVEREADY "B"	MALLORY "A"	MALLORY "B"	NOTES
M1	1.5V	P-15		930		1015		M-15R	2 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA PHILCO PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	NOTES
M2	1N60C	34-8022-5		1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	PHILCO PART No.	NOTES
M3	Tuning Cap.	31-2792-1	2 Gang
	Printed Board	54-5852-1	Series T-66
	Printed Board	54-5852-3	Series T-61

CABINETS & CABINET PARTS

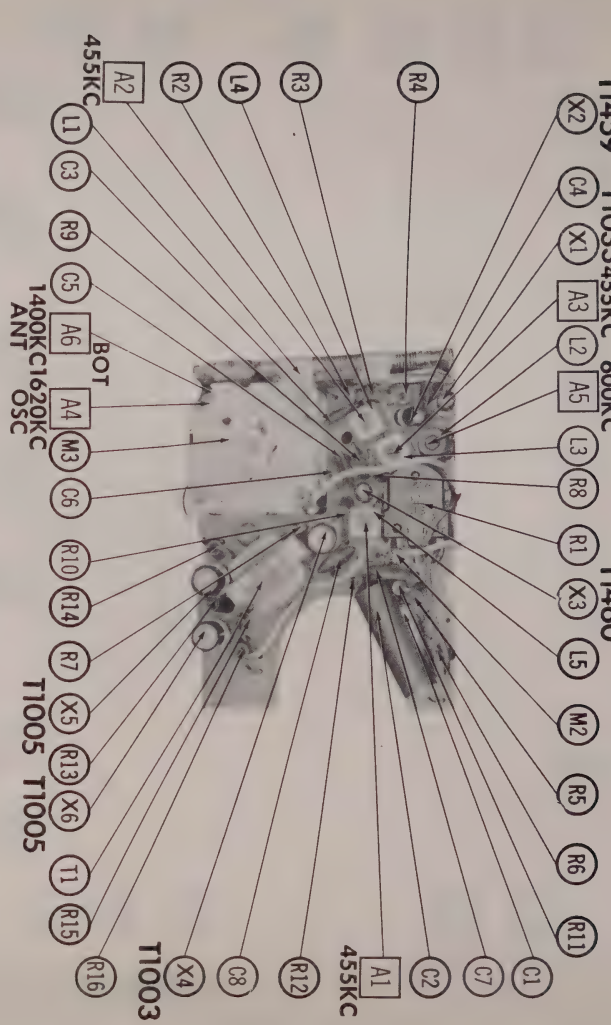
(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Window	54-5844-1	Models T-66 Series
Dial	28-13543-1	Models T-66 Series
Dial	424-8233	Includes Mounting Pad, Model T-61 Series
Knob	28-13500-1	Volume, Models T-66 Series
Knob	28-13500-4	Volume, Model T-61 Series
Cabinet Back	54-5843-1	Model T-66CR
Cabinet Back	54-5843-2	Models T-61IV, T-66IV
Cabinet Back	54-5843-3	Model T-66AQ
Cabinet Back	54-5843-4	Model T-61BK
Cabinet Back	54-5843-5	Model T-61TE
Cabinet Front	424-8144	Model T-66CR
Cabinet Front	424-8148	Model T-66IV
Cabinet Front	424-8149	Model T-66AQ
Cabinet	424-8204	Includes Window Assembly, Model T-61BK
Cabinet	424-8206	Includes Window Assembly, Model T-61IV
Cabinet	424-8205	Includes Window Assembly, Model T-61TE
Case	51-0168-2	Carrying, Model T-66 Series

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

CHASSIS—TOP VIEW



PHOTOFACT® Folder with CIRCUITRACE®

**PRECISE MODEL
MARK XXIV**

PRECISE MODEL
MARK XXIV

PRECISE MODEL
MARK XXIV

TRADE NAME	Precise Model Mark XXIV
MANUFACTURER	Precise Development Corp., 2 Neil Court, Oceanside, N. Y.
TYPE SET	AC Operated 9 Tube Stereo Amplifier
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 90 Watts, .84 Amp. @117 Volts AC

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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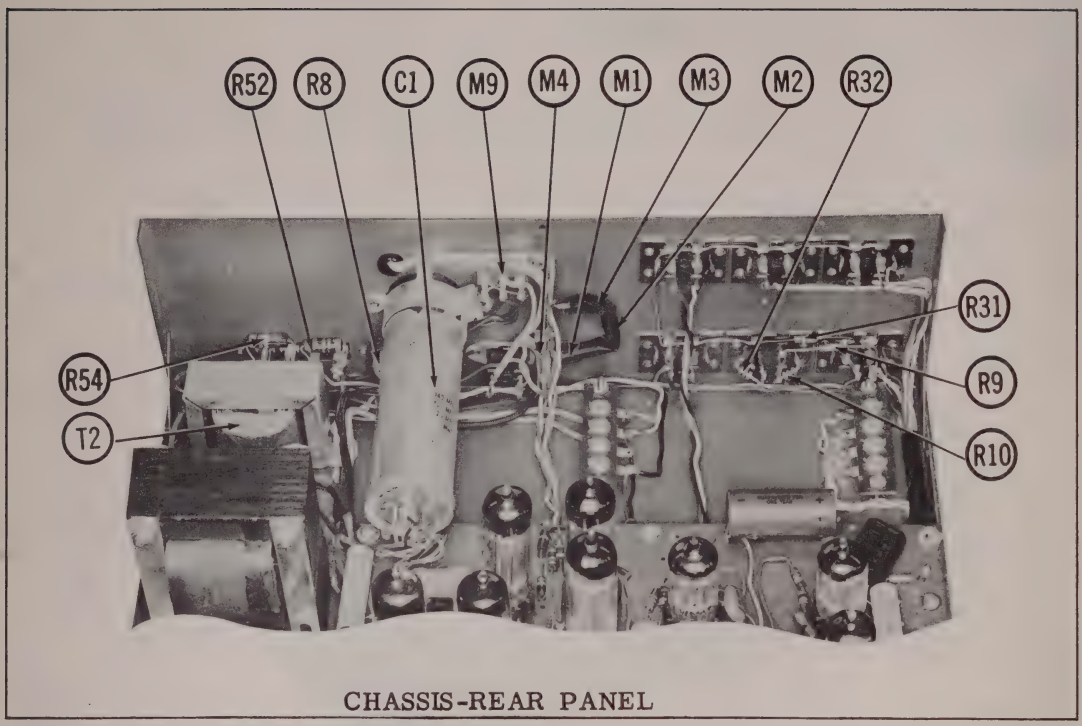
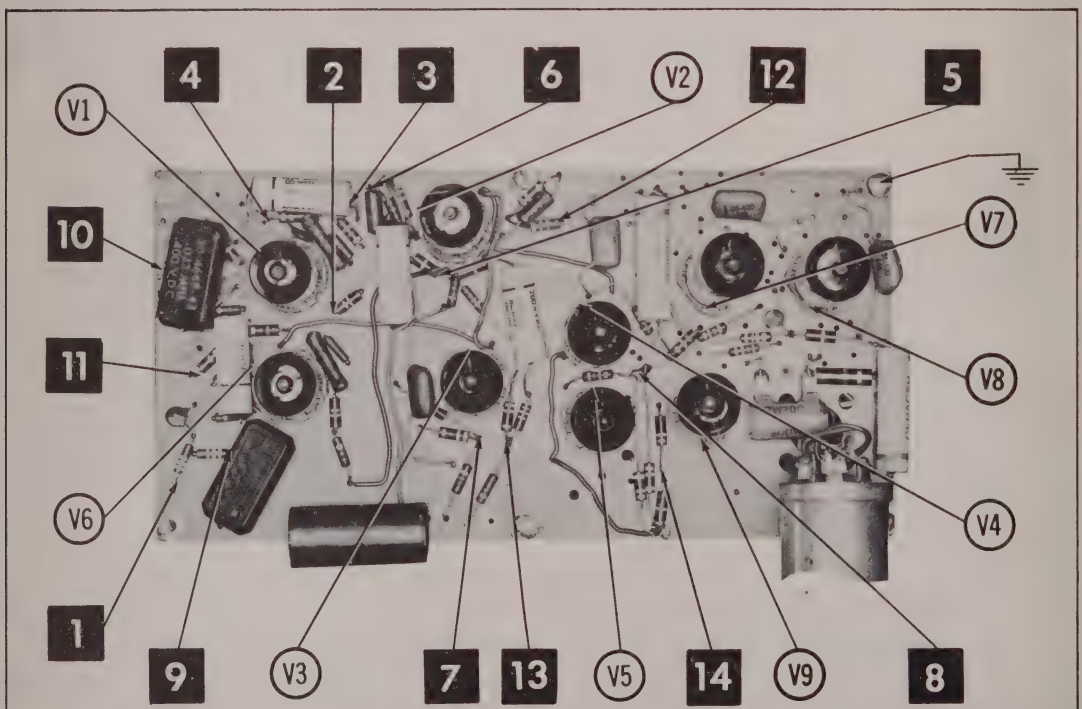


CHASSIS-REAR PANEL



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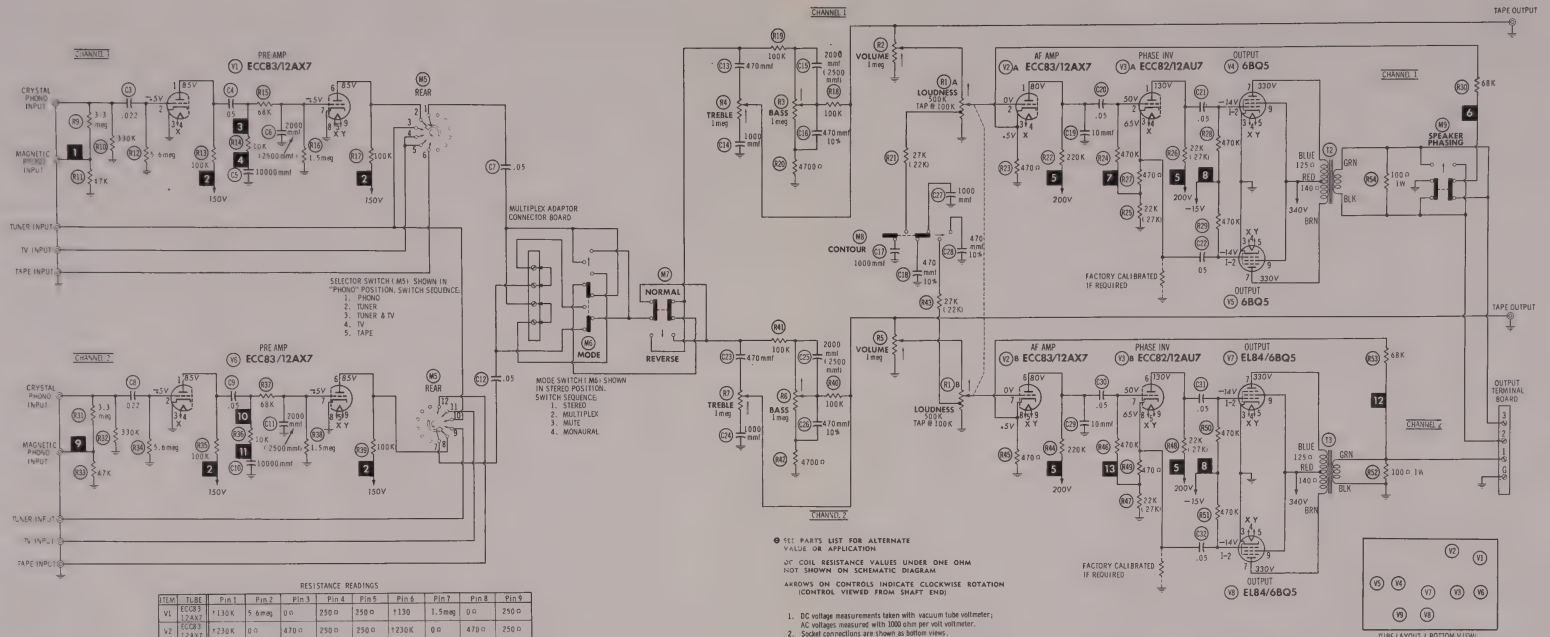
PRINTED BOARD

ARROWS INDICATING TUBE LOCATIONS ARE POINTING TO PIN 1 UNLESS OTHERWISE INDICATED



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	ECC83 / 12AX7	†130K	5.6meg	0Ω	250Ω	250Ω	†130	1.5meg	0Ω	250Ω
V2	ECC83 / 12AX7	†230K	0Ω	470Ω	250Ω	250Ω	†230K	0Ω	470Ω	250Ω
V3	ECC83 / 12AX7	†32K	500K	22K	250Ω	250Ω	†32K	500K	22K	250Ω
V4	6BQ5	NC	650K	0Ω	250Ω	250Ω	NC	†175Ω	NC	†50Ω
V5	6BQ5	NC	650K	0Ω	250Ω	250Ω	NC	†190Ω	NC	150Ω
V6	ECC83 / 12AX7	†130K	5.6meg	0Ω	250Ω	250Ω	†130K	1.5meg	0Ω	250Ω
V7	EL84 / 6BQ5	NC	650K	0Ω	250Ω	250Ω	NC	†175Ω	NC	†50Ω
V8	EL84 / 6BQ5	NC	650K	0Ω	250Ω	250Ω	NC	†190Ω	NC	†50Ω
V9	EZ81 / 6CA4	79Ω	NC	¶	250Ω	250Ω	NC	88Ω	NC	NC

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 3 OF V9. NC NO CONNECTION

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE
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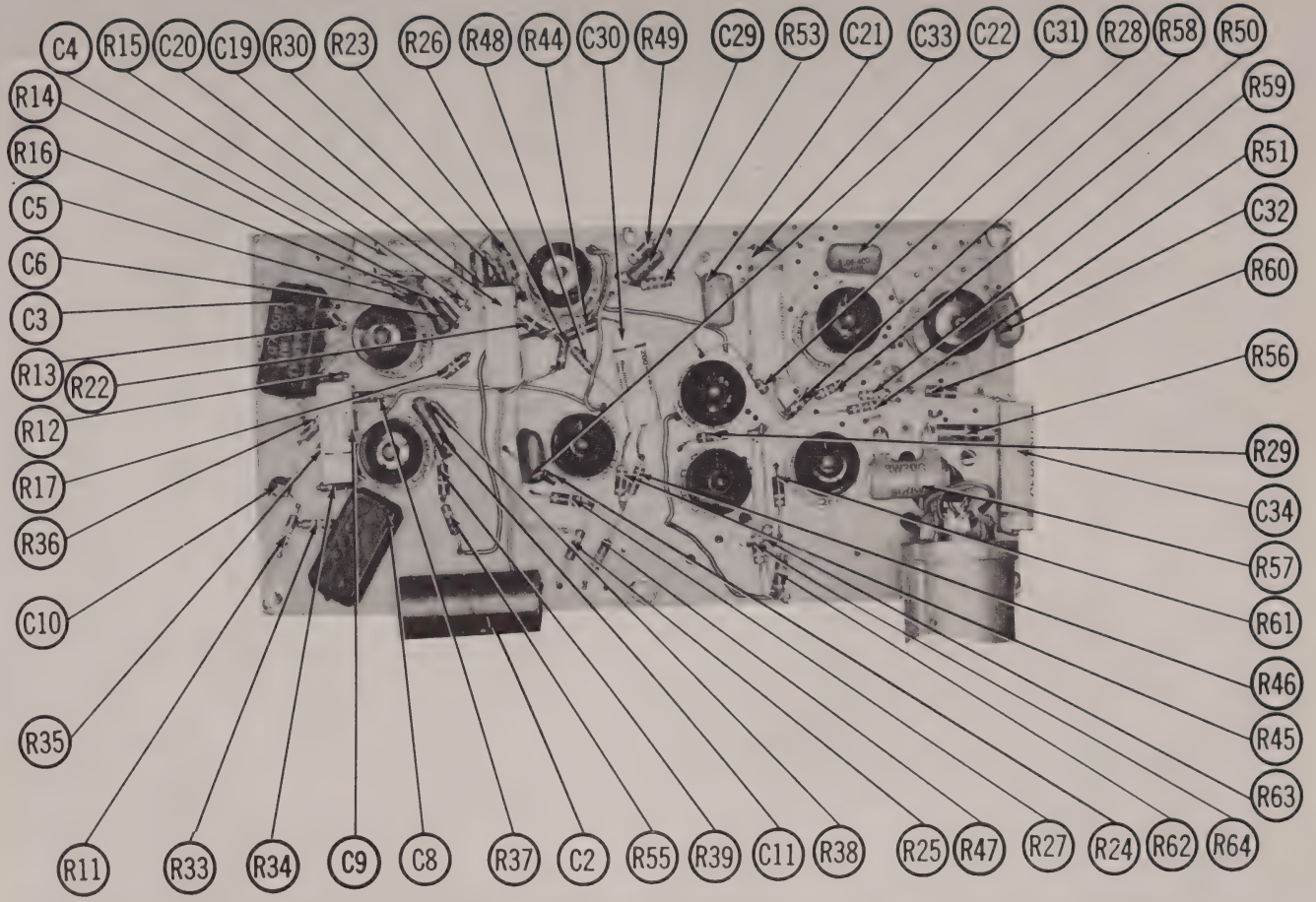
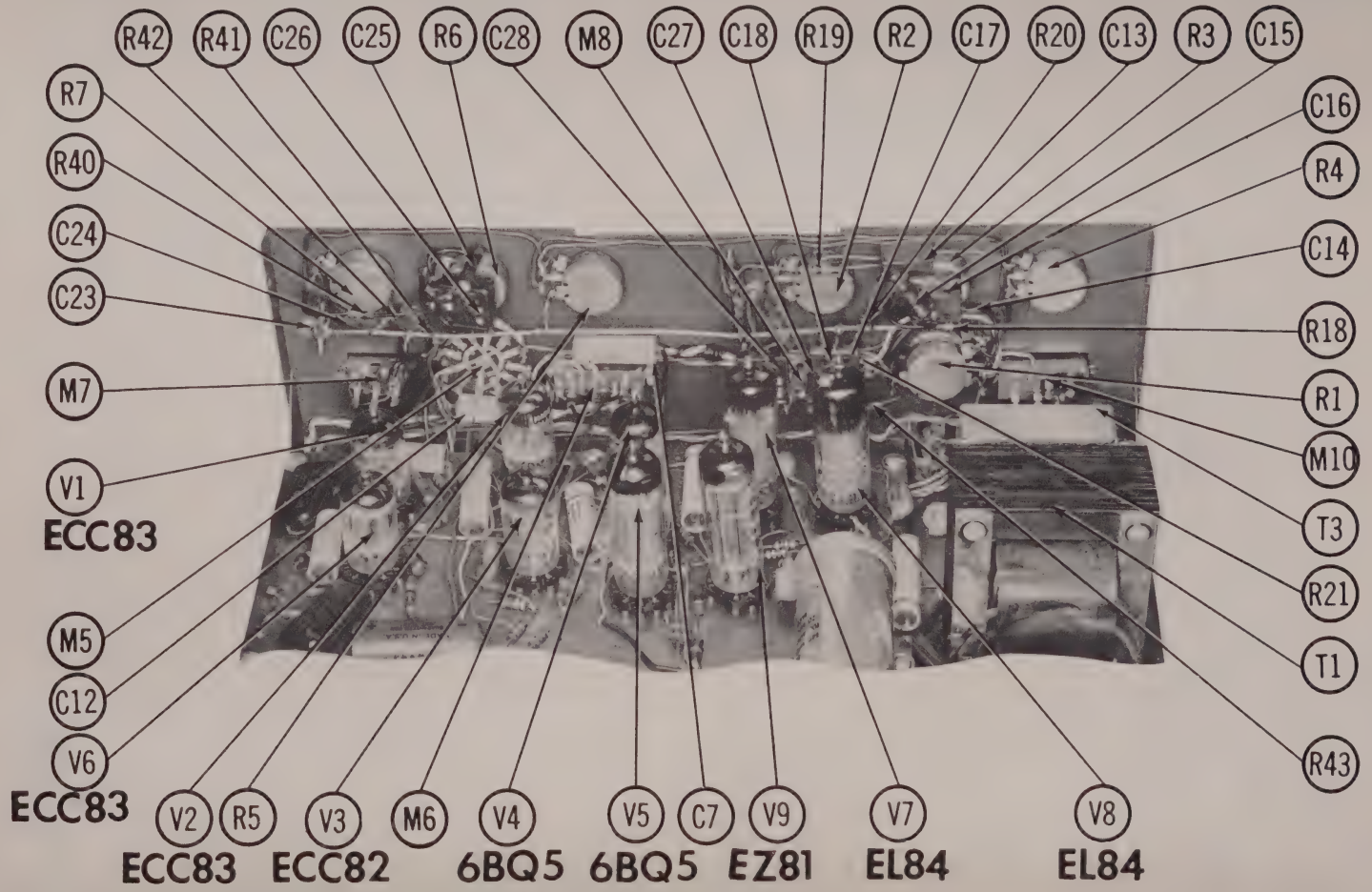
PRECISE MODEL MARK XXIV



PRINTED BOARD-TOP VIEW

PRECISE MODEL
MARK XXIV



CHASSIS TOP VIEW-CONTROL PANEL REAR

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE (GENERAL ELECTRIC • RAYTHEON • SYLVANIA)
V1	Channel 1 Preamp.	ECC83/12AX7
V2	Channel 1 AF Amp. - Channel 2 AF Amp.	ECC83/12AX7
V3	Channel 1 Phase Inv. - Channel 2 Phase Inv.	ECC82/12AU7
V4	Channel 1 Output	6BQ5
V5	Channel 1 Output	6BQ5
V6	Channel 2 Preamp.	ECC83/12AX7
V7	Channel 2 Output	EL84/6BQ5
V8	Channel 2 Output	EL84/6BQ5
V9	Rectifier	EZ81/6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA PRECISE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▬140	300		AFH3-29-98	D0025	FP326.78		TVLS-3585.5*	
B	■100	300							
C	▲20	300							
C2	24	250		PRS1650	BR3025	TC55	TD-30-250	TVA-1510	①

① Some versions may use 20mfd@250V in this application.
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C4	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	2000	(2500) †	SI 2000	D6-202	BYA10D2	CCD-202	B-220	5HK-D20
C7	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C8	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C9	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C10	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C11	2000	(2500) †	SI 2000	D6-202	BYA10D2	CCD-202	B-220	5HK-D20
C12	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C13	470		1468-00047		5W5T47	CM-19B-471M	MCJ244	1FM-347
C14	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C15	2000	(2500) †	SI 2000	D6-202	BYA10D2	CCD-202	B-220	5HK-D20
C16	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C17	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C18	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C19	10		SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C20	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C21	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C22	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C23	470		1468-00047		5W5T47	CM-19B-471M	MCJ244	1FM-347
C24	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C25	2000	(2500) †	SI 2000	D6-202	BYA10D2	CCD-202	B-220	5HK-D20
C26	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C27	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C28	470 10%		1469-00047		5R5T47	CM-19B-471K	MCJ244	MS-347
C29	10		SI 10	D6-100	L10Q1	CCD-100	GP410	10TS-Q10
C30	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C31	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C32	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C33	.1 200V		P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10
C34	.1 200V	Note 1	P288N-1	DF-104	CUB2P1	2DP-3-104	GEM-201	2TM-P10

† Alternate Value.
Note 1. Not used in some versions.

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA PRECISE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	500K 100K Tap	½	BA819-016				FA55T15	Loudness, Channel 2
B	500K 100K Tap	½					RU55T15	Loudness, Channel 1
C	Shaft						CS3500	
R2A	1meg	½	BA811-2129	B-69	A47-1meg-S	Q11-137	U54	Volume, Channel 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R3A	1meg	½	BA811-2129	B-69	A47-1meg-S	Q11-137	U54	Bass, Channel 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R4A	1meg	½	BA811-2129	B-69	A47-1meg-S	Q11-137	U54	Treble, Channel 1
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R5A	1meg	½	BA811-2129	B-69	A47-1meg-S	Q11-137	U54	Volume, Channel 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R6A	1meg	½	BA811-2129	B-69	A47-1meg-S	Q11-137	U54	Bass, Channel 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R7A	1meg	½	BA811-2129	B-69	A47-1meg-S	Q11-137	U54	Treble, Channel 2
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	
R8A	1000Ω	½	BA269-029	AB-5	A47-1000-S	B11-108	U4	Hum Balance
B	Shaft			AK-1	FKS-1/4	SK2	Not Req.	

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R9	3.3meg			
R10	330K			
R11	47K			
R12	5.6meg			
R13	100K			
R14	10K			
R15	68K			
R16	1.5meg			
R17	100K			
R18	100K			
R19	100K			
R20	4700Ω			
R21	27K			(22K) *
R22	220K			
R23	470Ω			
R24	470K			
R25	22K			(27K) *
R26	22K			(27K) *
R27	470Ω			
R28	470K			
R29	470K			
R30	68K			
R31	3.3meg			
R32	330K			
R33	47K			
R34	5.6meg			
R35	100K			
R36	10K			

ITEM No.	RATING	REPLACEMENT DATA IRC PART No.	WORKMAN TV PART No.	REMARKS
R37	68K			
R38	1.5meg			
R39	100K			
R40	100K			
R41	100K			
R42	4700Ω			
R43	27K			
R44	220K			
R45	470Ω			
R46	470K			
R47	22K			(27K) *
R48	22K			(27K) *
R49	470Ω			
R50	470K			
R51	470K			
R52	100Ω 1W			
R53	68K			
R54	100Ω 1W			
R55	22K			
R56	10K 2W			
R57	50Ω 3W	PW5-50	5W-SQ-50	
R58	180K			
R59	470K			(420K) *
R60	220K			Note 1
R61	100K			
R62	220K			
R63	750K			Note 1
R64	750K			Note 1

* Alternate Value.
Note 1. Not used in some versions.

PARTS LIST AND DESCRIPTIONS (Continued)

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	PRECISE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V@ .84A	580VCT @ .120ADC	6.3V@ 5.3A	T-7627-A		P-8177①			① Drill new mounting hole. Tape CT on 6.3V winding.

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	PRECISE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	7100Ω CT	6-8Ω	M-4362	A-2904①	A-3870	22S88	S-57Z	① Drill New Mounting Hole(s).
T3	7100Ω CT	6-8Ω	M-4362	A-2904①	A-3870	22S88	S-57Z	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	PRECISE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.001A					M2 and M3 Not Used in Some Versions.
M2	.001A					
M3	.001A					

FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			PRECISE PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M4	3AG	5A 250V P/T			318005 (3AG 5A 250V P/T)		GJV 5	

MISCELLANEOUS

ITEM No.	PART NAME	PRECISE PART No.	NOTES
M5	Switch		Function Selector (Rotary Type)
M6	Switch		Stereo-Monaural (DP 4 Position Slide Type) Mode
M7	Switch		Normal-Reverse (Phase) (DPDT Slide Type)
M8	Switch		Loudness Contour (DPDT Slide Type)
M9	Switch		Speaker Selector (DPDT Slide Type)
M10	Switch		Power Off-On (DPTP Slide Type)

WIRING DATA

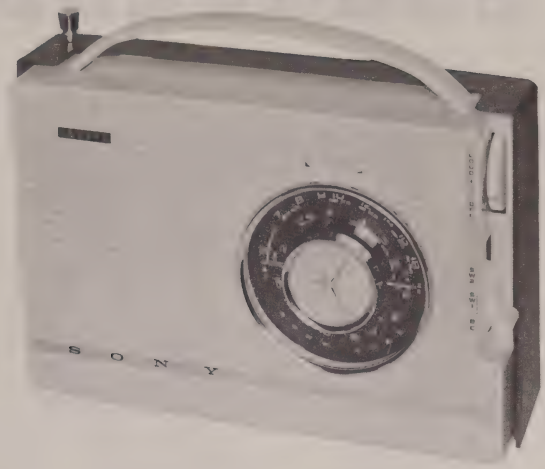
General-use Unshielded Hook-up Wire ..... Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

Power Cord ..... Use BELDEN No. 1765-B (6 Ft. Length)
1725-K (7½ Ft. Length)

PHOTOFACT® Folder with CIRCUITRACE®

SONY MODEL TR-814

SONY MODEL TR-814



TRADE NAME	Sony Model TR-814		
IMPORTER	Sony Corp. of America, 514 Broadway, New York 12, N. Y.		
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver		
POWER SUPPLY	6 Volts DC	RATING	11MA@6 Volts DC (No Signal, Min. Volume) 25MA@6 Volts DC (Signal, Normal Volume)

TUNING RANGE—BROADCAST 535 – 1605KC SHORT WAVE #1 2-6MC SHORT WAVE #2 6-18MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1, A2, A3..... GENERAL CEMENT #5004, 5009, 8195, 8274, 8275, 8607, 8728, 8987, 8988, 8989, 9291
WALSCO #2515, 2520, 2522, 2523, 2531, 2532, 2534, 2537, 2538

A4, A7, A8, A11, A12, A15
GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528

A5, A9, A13..... GENERAL CEMENT #9440

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400% Mod.)	(BC) Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5, A6	"
4.	"	1400KC	1400KC Signal.	"	A7	"
5.	"	6MC	(SW-1) 6MC	"	A8	"
6.	"	2MC	2MC	"	A9, A10	"
7.	"	5MC	5MC Signal.	"	A11	"
8.	"	18MC	(SW-2) 18MC	"	A12	"
9.	"	6MC	6MC	"	A13, A14	"
10.	"	16MC	16MC Signal.	"	A15	Adjust for maximum output. Repeat Steps 2 thru 10 if necessary.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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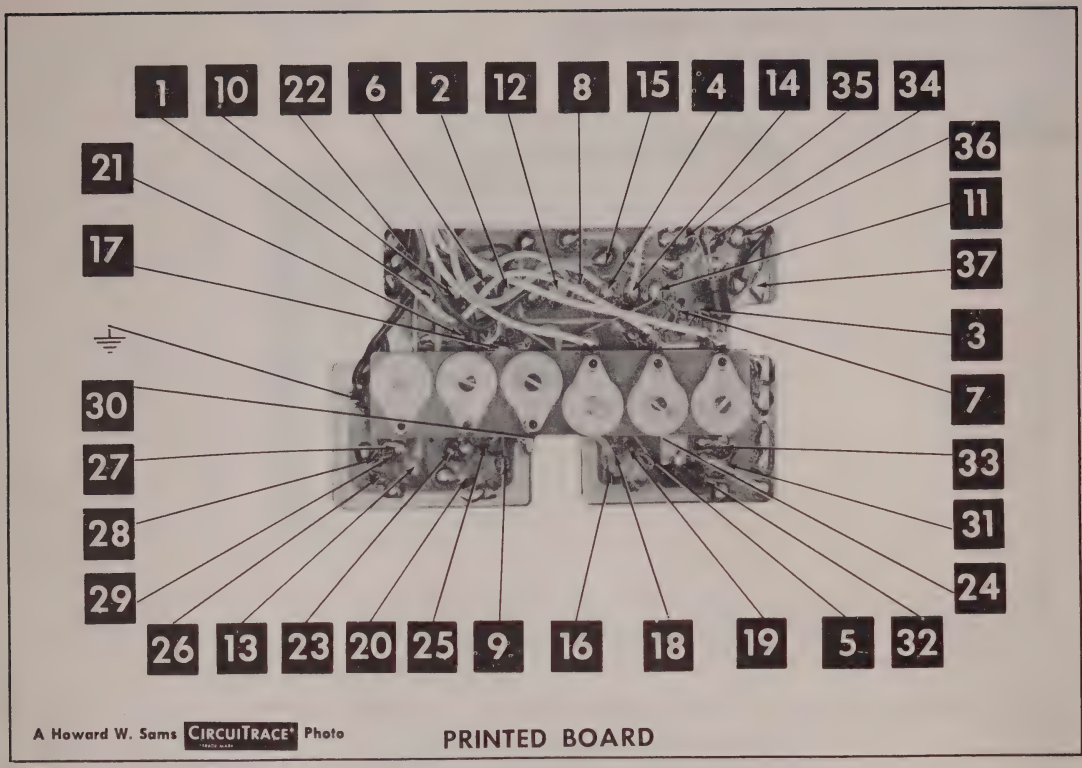
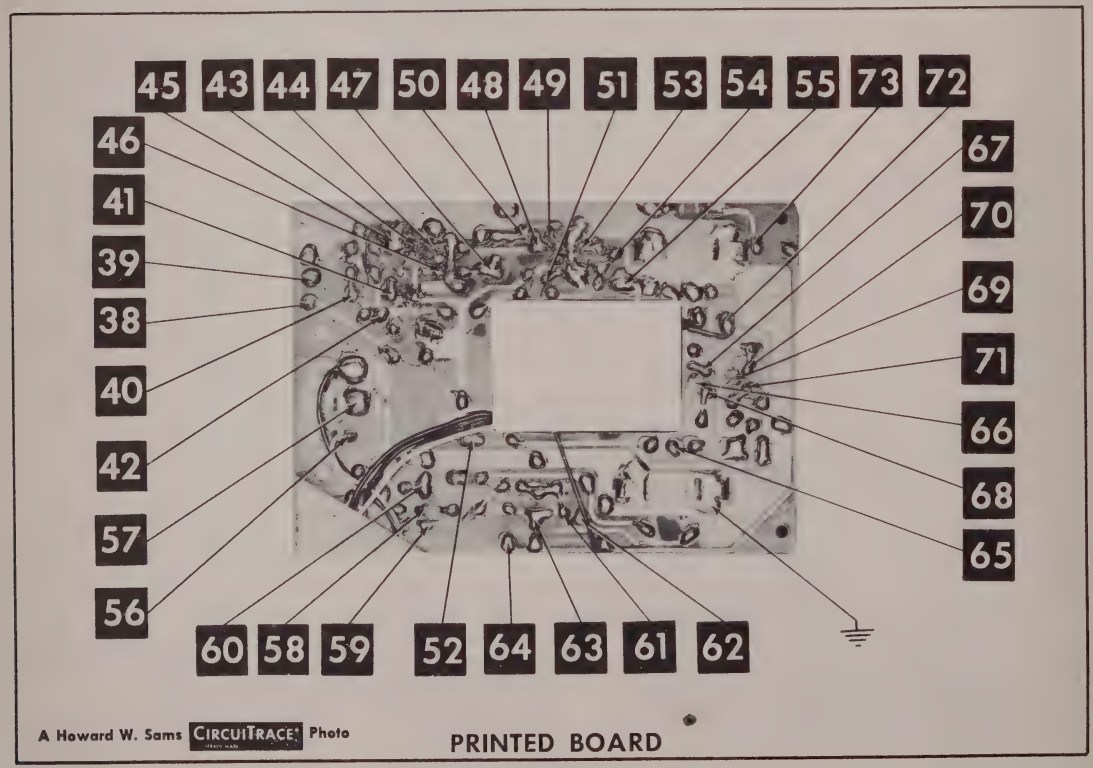
SONY MODEL TR-814
SET 542 FOLDER 12



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD



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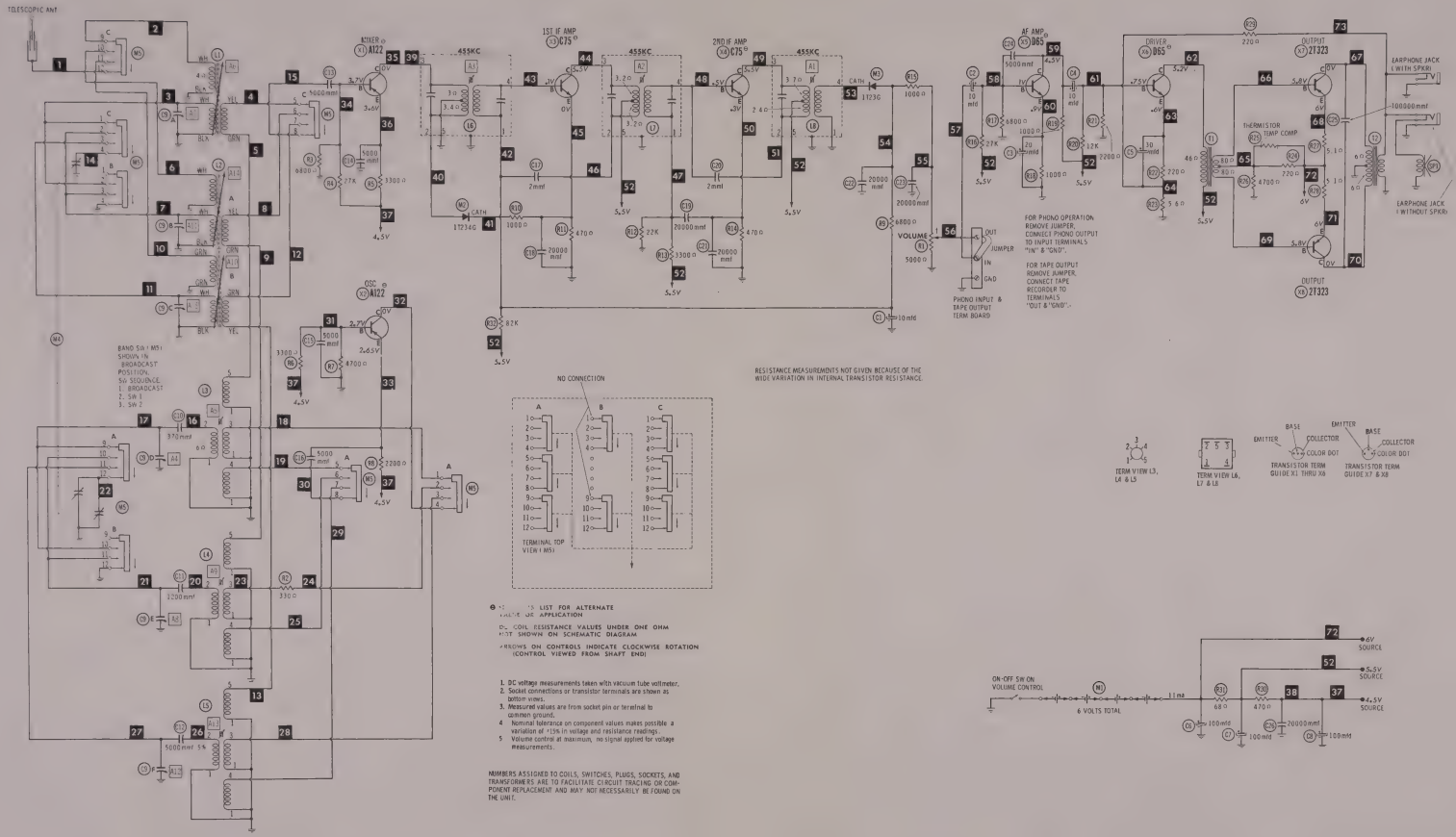
TELESCOPIC ANT
MIXER X1 A122
1ST IF AMP X3 C75
2ND IF AMP X4 C75
455KC
AF AMP X5 D65
DRIVER X6 D65
OUTPUT X7 2T323
OUTPUT X8 2T323
OSC X2 A122
EARPHONE JACK (WITH SPKR)
EARPHONE JACK (WITHOUT SPKR)
THERMISTOR TEMP COMP
VOLUME
JUMPER
OUT
IN
GND
PHONO INPUT & TAPE OUTPUT TERM BOARD
FOR PHONO OPERATION REMOVE JUMPER, CONNECT PHONO OUTPUT TO INPUT TERMINALS "IN" & "GND".
FOR TAPE OUTPUT REMOVE JUMPER, CONNECT TAPE RECORDER TO TERMINALS "OUT" & "GND".
BAND SW (M5) SHOWN IN BROADCAST POSITION. SW SEQUENCE: 1. BROADCAST 2. SW 1 3. SW 2
NO CONNECTION
TERMINAL TOP VIEW (M5)
TERM VIEW L3, L4 & L5
TERM VIEW L6, L7 & L8
TRANSISTOR TERM GUIDE X1 THRU X6
TRANSISTOR TERM GUIDE X7 & X8
EMITTER
BASE
COLLECTOR
COLOR DOT
RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.
ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)
1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.
NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.
ON-OFF SW ON VOLUME CONTROL
6 VOLTS TOTAL
6V SOURCE
5.5V SOURCE
4.5V SOURCE

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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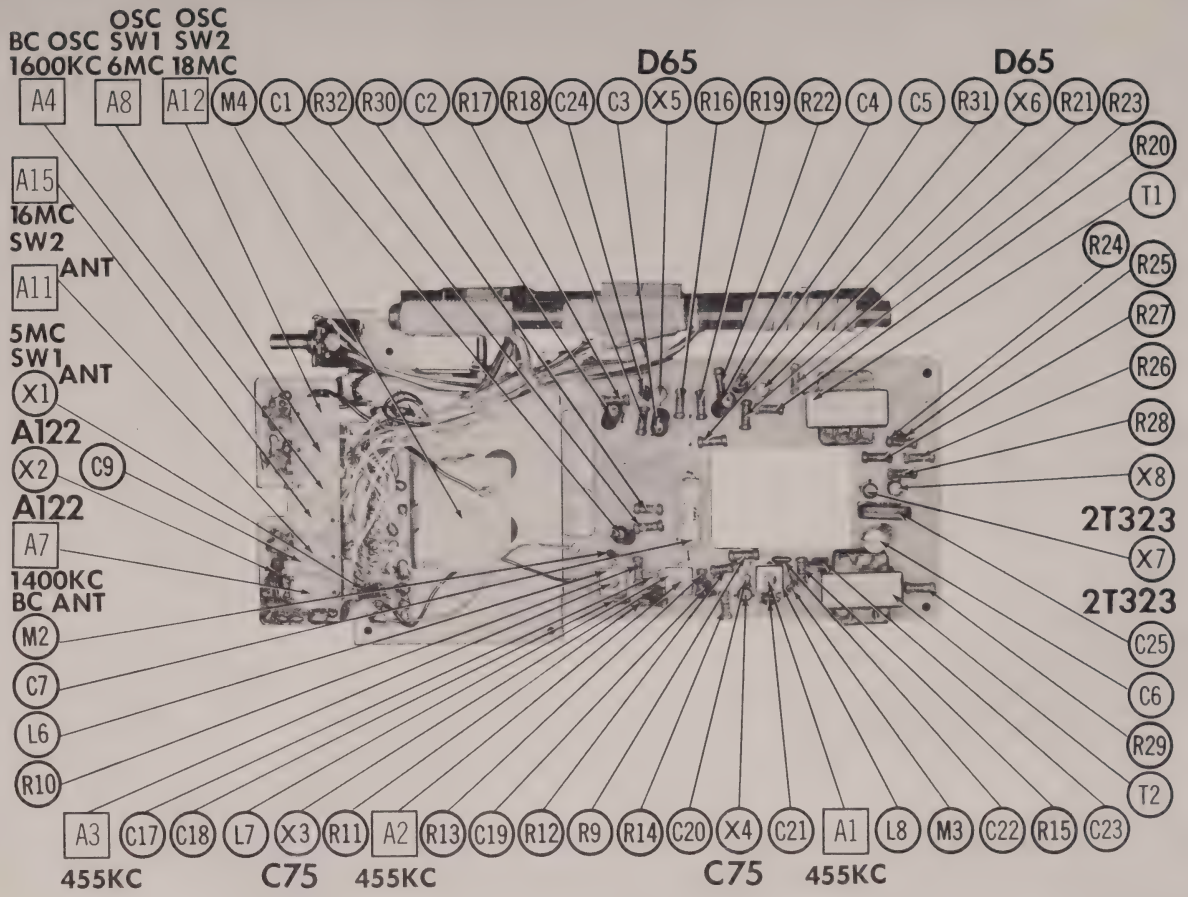
SONY MODEL TR-814



CHASSIS TOP VIEW

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	A122 *	Mixer				PNP
X2	A122 *	Oscillator				PNP
X3	C75 *	1st IF Amplifier				NPN
X4	C75 *	2nd IF Amplifier				NPN
X5	D65 *	AF Amplifier				NPN
X6	D65 *	Driver				NPN
X7	2T323	Output				PNP
X8	2T323	Output				PNP

* Number may be preceded by 2S.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	SONY PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	10	6	1-119-005	PTT-6010	NLW10-6	TT6X10	MLV10-6	TE-1087	
C2	10	6	1-119-005	PTT-6010	NLW10-6	TT6X10	MLV10-6	TE-1087	
C3	20	6		PTT-6020	NLW20-6	TT15X20	MLV20-12	TE-1090	
C4	10	6	1-119-005	PTT-6010	NLW10-6	TT6X10	MLV10-6	TE-1087	
C5	30	6	1-119-009	PTT-6030	NLW30-6	TT6X30	MLV30-6	TE-1092	
C6	100	6	1-119-010	PTT-6100	NLW100-12	TT6X100	MLV100-6	TE-1102	
C7	100	6	1-119-010	PTT-6100	NLW100-12	TT6X100	MLV100-6	TE-1102	
C8	100	6	1-119-010	PTT-6100	NLW100-12	TT6X100	MLV100-6	TE-1102	

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

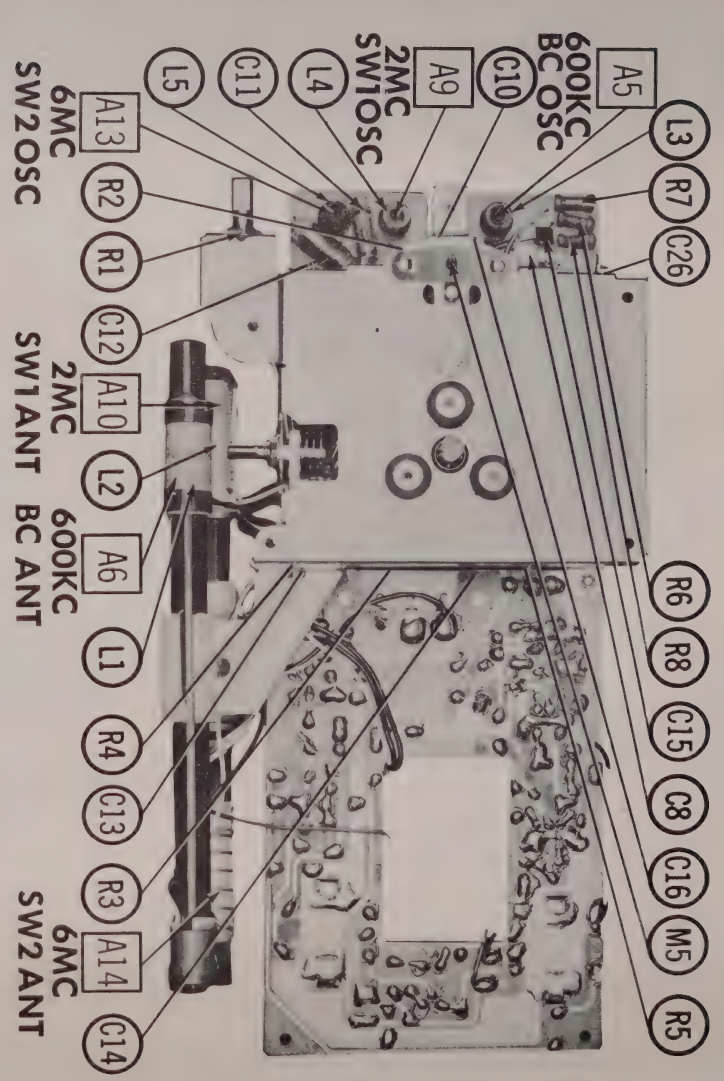
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C9A		#1-141-112						
B								
C								
D								
E								
F								
C10	370		SI 390	D6-391	L10T39	CCD-391	GP339	10TS-T39
C11	1200		SI 1200	D6-121	L10D12	CCD-121	B-212	10TS-D12
C12	5000 5%				1R5D5	CM-20-502J	MCE465	MS-25
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C15	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C16	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C17	2		NPO-DI 2.0	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C18	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C19	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C20	2		NPO-DI 2.0	DTZ-2R2	C10V2C	CCTO-2R2	CNO-522	10TCC-V22
C21	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C22	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C23	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C24	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C25	100000		C80V104AM	DDA-104	H-05P1	DP-2-104	TA-P10	TG-P10
C26	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

Sony Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	SONY PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1*	5000Ω	½	1-221-239					Volume & Switch

CHASSIS—BOTTOM VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	330Ω			
R3	6800Ω			
R4	27K			
R5	3300Ω			
R6	3300Ω			
R7	4700Ω			
R8	2200Ω			
R9	6800Ω			
R10	1000Ω			
R11	470Ω			
R12	22K			
R13	3300Ω			
R14	470Ω			
R15	1000Ω			
R16	27K			
R17	6800Ω			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R18	1000Ω			
R19	1000Ω			
R20	12K			
R21	2200Ω			
R22	220Ω			
R23	5.6Ω			
R24	220Ω			
R25	Temp. Comp.			Pt. #S-250
R26	4700Ω			
R27	5.1Ω			
R28	5.1Ω			
R29	220Ω			
R30	470Ω			
R31	68Ω			
R32	82K			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		SONY PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	BC Loopstick	1-401-048					
L2A	SW 1 Loopstick	1-401-064					
B	SW 2 Loopstick						
L3	BC Osc.	1-405-031					
L4	SW 1 Osc.	1-405-034					
L5	SW 2 Osc.	1-405-035					
L6	1st IF	1-403-034					
L7	2nd IF	1-403-035					
L8	3rd IF	1-403-036					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SONY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	.8	1	1-423-018					

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SONY PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	700Ω CT	6-8Ω	1-427-022					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SONY PART No.	QUAM PART No.	
SP1	5"	PM	6-8Ω	1-502-020	5A07Z8	

BATTERIES

ITEM No.	VOLTAGE	SONY PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	1-528-001 (UM-1)		230 *		A 100 *		M-13R *	* 4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		SONY PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1T23G			1N60	1N60	Overload (Pigtail)
M3	1T23G			1N60	1N60	Detector (Pigtail)

MISCELLANEOUS

ITEM No.	PART NAME	SONY PART No.	NOTES
M4	Tuning Cap.	1-151-029	2 Gang
M5	Switch	1-513-048	Band Selector (Slide Switch)
	Earphone	0-211-822	(ME-10)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial	3-807-007	Plate
Pointer	3-807-010	Dial
Knob	3-807-012	Tuning
Knob	3-807-017	Fine Tuning
Knob	3-807-016	Volume
Knob	3-807-015	Band Switch
Cabinet	3-807-001	Includes Rear Cover

WIRING DATA

General-use Unshielded Hook-up Wire .....Use BELDEN No. 8530 (Solid) Available in Ten Colors
8524 (Stranded) Available in Ten Colors

PHOTOFACT® Folder

**STROMBERG-CARLSON
MODEL IM-60-M**

STROMBERG-CARLSON
MODEL IM-60-M

STROMBERG-CARLSON
MODEL IM-60-M

TRADE NAME	Stromberg-Carlson Model IM-60-M
MANUFACTURER	Stromberg-Carlson Co., A Div. of General Dynamics Corp., Commercial Products Div., 1400 N. Goodman Street, Rochester 9, N. Y.
TYPE SET	Battery Operated 2 Tube, 2 Transistor Universal Type Automobile AM Receiver
POWER SUPPLY	12 Volt Storage Battery
TUNING RANGE—BROADCAST	540 — 1600KC RATING 1.4 Amp. @12.6 Volts DC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools: A1 thru A4.....GENERAL CEMENT #8282, 8606, 8606-L, 9295, 9440
WALSCO #2526, 2543, 2544, 2545
A5, A6, A7.....GENERAL CEMENT #5000, 5003, 8276, 8290
WALSCO #2512, 2515, 2522, 2523, 2525, 2537

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	High side thru .1mfd to pin 9 (grid) of Converter. Low side to chassis.	262.5KC (400% Mod.)	High end stop.	Across voice coil.	A1, A2, A3, A4	Adjust for maximum output.
2.	Thru dummy (Fig. 1) to antenna receptacle.	1610KC	"	"	A5	"
3.	"	1200KC	1200KC Signal.	"	A6, A7	"
4.	With radio installed in car and antenna fully extended, tune in a weak station near 1000KC and adjust A7 for maximum output.					

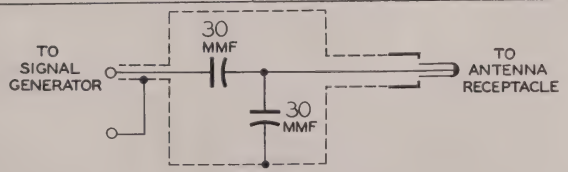


FIG. 1

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KD579

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SET 542 FOLDER 13

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Shielded Hook-up Wire	Use BELDEN No. 8885
Bonding Strap	Use BELDEN No. 8661

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
	• GENERAL ELECTRIC •			RAYTHEON • SYLVANIA •	
V1	RF Amp.-Converter	12FX8	V2	IF Amp.-Det.-AF Amp.	12FR8

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2N591	Driver	2N591	2N573	2N591	PNP
X2	2N257	Output			2N155	PNP Note 1

Note 1. When replacing, apply silicone grease (General Cement #8101 or equivalent) to both sides of insulator. Tighten mounting screws securely. Check bias adjustment.

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	Stromberg-Carlson PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1A	▲500	16	111000-080	AFH3-00-95	B0043	WP200.6	TMS-1110	TVLS-2157 *	
B	■500	16					TD-500-25		

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

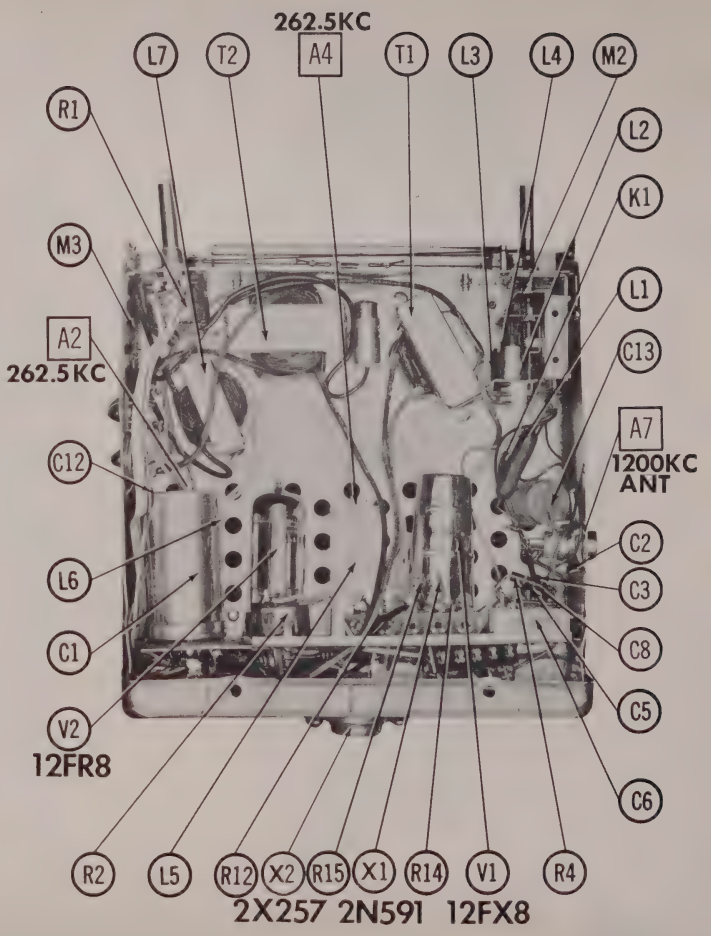
ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C2	25-180	#110000-005				463		
C3	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C4	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C5	390 10%		DI-390	DD-391	L10T39	CCD-391	GP339	10TS-T39
C6A	7.5-80							
B	100	#110000-004						
C	375-445							
C7	5 NPO		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C8	100		DI-100	DD-101	L10T1	CCD-101	GP310	10TS-T10
C9	47		DI-47	DD-470	L10Q47	CCD-470	GP447	10TS-Q47
C10	150		DI-150	DD-151	L10T15	CCD-151	GP315	10TS-T15
C11	.01 200V		P288N-01	D6-103	CUB4S1	4DP-1-103	GEM-411	4TM-S10
C12	3000		DI-3000	DD-302	BYA10D3	CCD-302	GP230	10TS-D30
C13	.5 50V		P282Z-5		CUB2P5	1DP-4-504	GEM-205	2PS-P50

\# Stromberg-Carlson Part Number.

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	Stromberg-Carlson PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	1meg	1/2	145000-093	AB-70	A47-1meg-Z	B13-137	U53	Volume
B	Shaft			AK-33	RS-3/16	SK9	DS-37	
C	Switch			KR-4	SWE-13	76-1	US-26	Power Off-On
R2	500Ω	2(WW)	145000-094			110-600	PFL-600	Bias

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R3	220K			
R4	10K			
R5	3.3meg			
R6	47K			
R7	10meg			
R8	47K			
R9	1.5meg			
R10	2200Ω			
R11	3.3meg			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R12	2700Ω			
R13	150Ω			
R14	220Ω			
R15	470K			
R16	10Ω			
R17	1Ω 2W			
R18	100Ω			
R19	33K			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Stromberg-Carlson PART No.	REPLACEMENT DATA
K1	Antenna Filter	47mmf, 1meg	179000-035	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Stromberg-Carlson PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	RF Choke (32uh)	114000-002	TV-180	9330-36	RTC-8593	T301	① Part of Tuner M2
L2	Ant.	①					
L3	RF	①					
L4	Osc.	①					
L5	Input IF	114000-203	BC-350	12-H1	RTC-8638	T604	
L6	Output IF	114000-205	BC-318 *				* Solder Mtg. Lugs into Chassis.

FILTER CHOKE

ITEM No.	RATINGS			REPLACEMENT DATA					NOTES
	CURRENT (Measured)	DC RES.	INDUCTANCE (0 CURRENT 1000 ∿)	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
L7	1.4A	.7Ω	.008HY	161000-001					

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	6.8	1	161000-171					

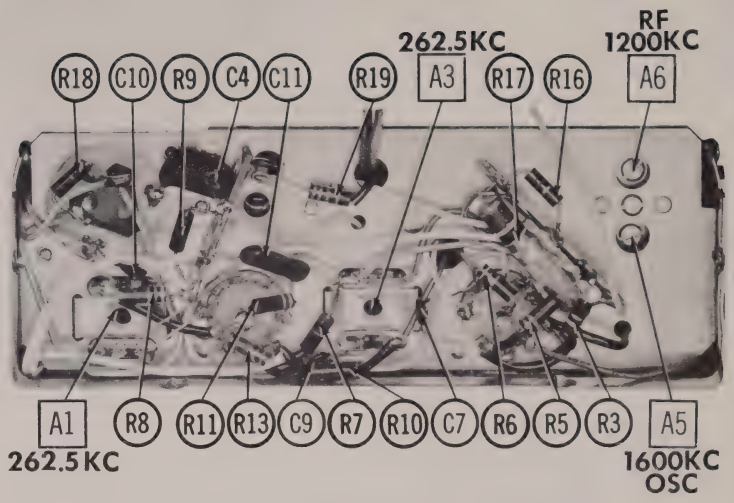
TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Stromberg-Carlson PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	30Ω	3-4Ω	161000-173					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Stromberg-Carlson PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	155000-048	5A1	

CHASSIS—END VIEW



FUSES

ITEM No.	TYPE	RATING	REPLACEMENT DATA					
			Stromberg-Carlson PART No.		LITTELFUSE PART No.		BUSS PART No.	
			FUSE	HOLDER	FUSE	HOLDER	FUSE	HOLDER
M1	SFE	5A 32V	128000-011	128000-042 128000-043 ♦	307005 (SFE 5A 32V)	155004	AGA 5	HHF

♦ Fuse Cap.

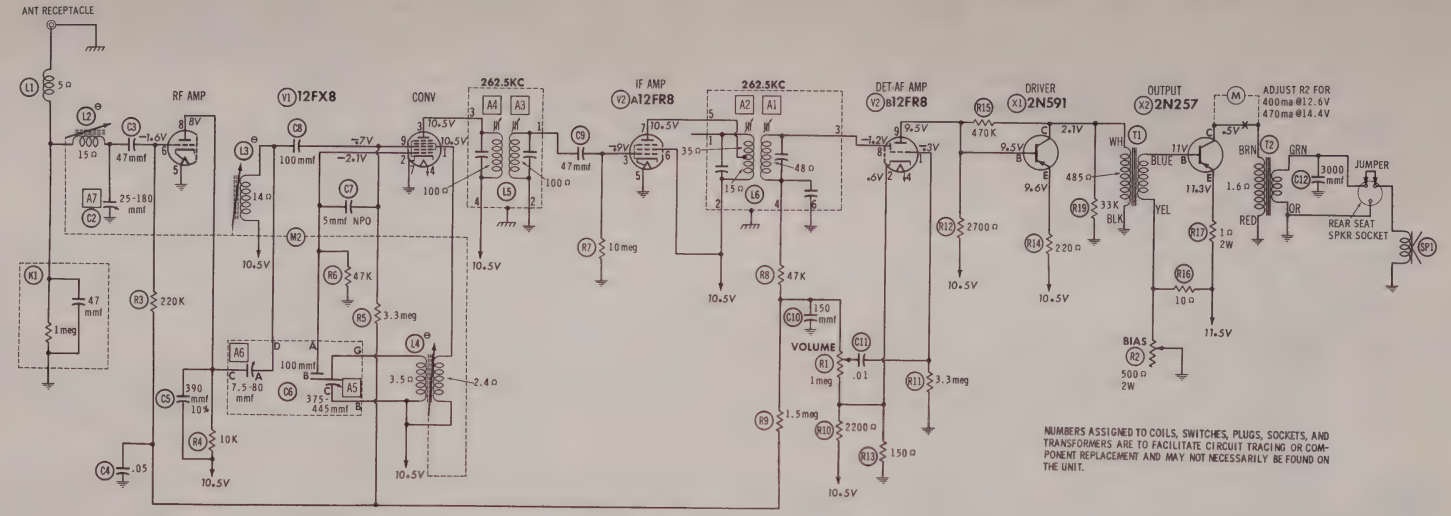
MISCELLANEOUS

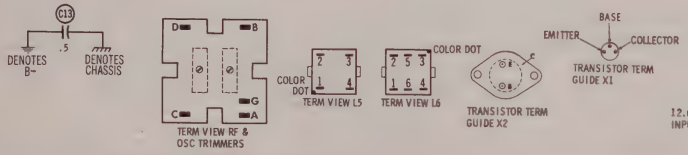
ITEM No.	PART NAME	Stromberg-Carlson PART No.	NOTES
M2	Tuner	164000-027	Manual, Complete
M3	Spark Plate	110000-020	

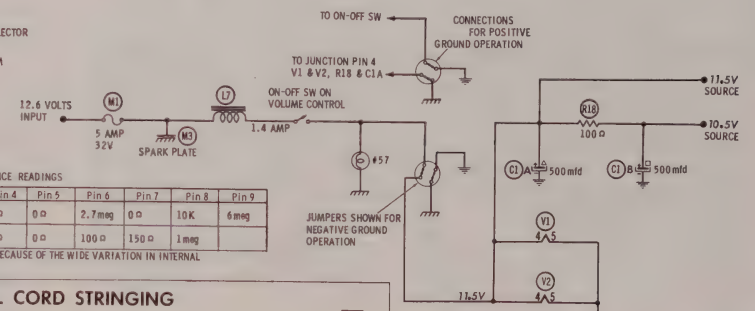
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Dial Glass	122000-048	
Dial Pointer	144000-007	
Knob	134000-086	







1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Battery voltage maintained at 12.6 volts for voltage readings.
5. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
6. Volume control at maximum, no signal applied for voltage measurements.

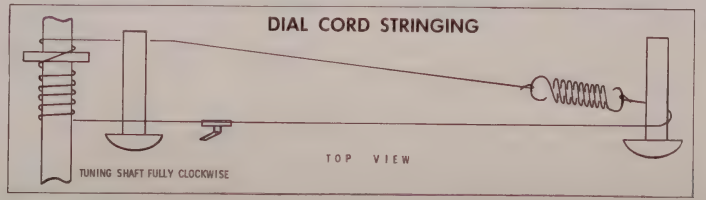
RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12FX8	100Ω	47K	200Ω	.1Ω	0Ω	2.7meg	0Ω	10K	6meg
V2	12FR8	3.3meg	150Ω	10meg	.1Ω	0Ω	100Ω	150Ω	1meg	

RESISTANCE MEASUREMENTS ON X1, X2 NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCES.

⊖ SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM



A PHOTOFACT STANDARD NOTATION SCHEMATIC

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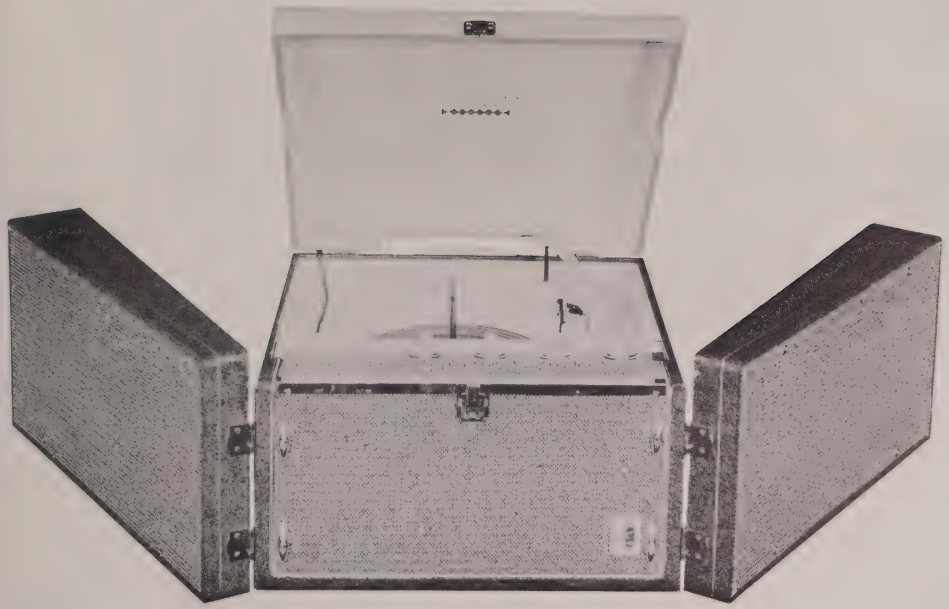
STROMBERG-CARLSON
MODEL 1M-60-M

PHOTOFACT® Folder

SYLVANIA MODEL 45P19 (Ch. 680-1)

SYLVANIA MODEL
45P19 (Ch. 680-1)



SYLVANIA MODEL
45P19 (Ch. 680-1)

TRADE NAME	Sylvania Model 45P19 (Ch. 680-1)
MANUFACTURER	Sylvania Home Electronics, Div. of Sylvania Electric Products, Inc., 700 Ellicott St., Batavia, N. Y.
TYPE SET	AC Operated 6 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 59 Watts, .6 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR V-M 1201 – PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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SET 542 FOLDER 14

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

◆ GENERAL ELECTRIC ◆ RAYTHEON ◆ SYLVANIA ◆

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 1 Phase Inv.	12AU7	V4	Channel 2 AF Amp. - Channel 2 Phase Inv.	12AU7
V2	Channel 1 Output	50EH5	V5	Channel 2 Output	50EH5
V3	Channel 1 Output	50EH5	V6	Channel 2 Output	50EH5

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	REPLACEMENT DATA SYLVANIA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	80	150	161-3048	PR4-250	BBRQ0789.5	WQ410	TDLT-7	TVA-4618	
B	80	150							
C	20	150							
C2	40	150	161-1053	PRS1470	BR4015	TC48	TD-40-150	TVA-1413	
C3	100	25NP	161-1069	PRS7340	BR10015	TCN425		TVANS-1207.1*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

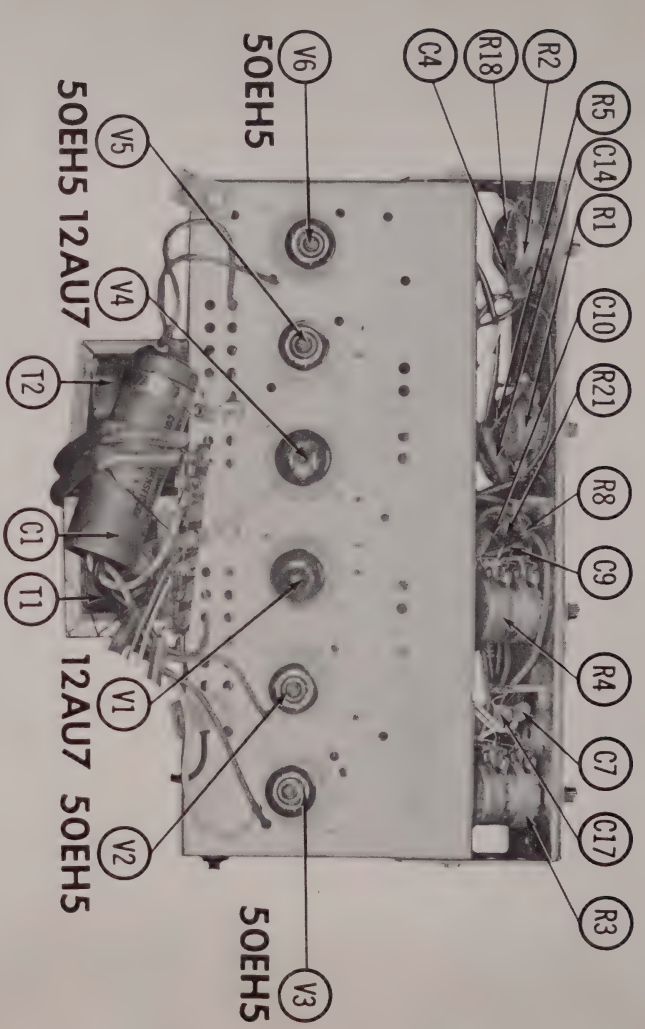
ITEM No.	RATING	REMARKS	REPLACEMENT DATA AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C4	3000		DI-3000	DD-302	BYA10D3	CCD-302	B-230	10TS-D30
C5	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C6	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C7	330		DI-330	DD-331	LI0T33	CCD-331	B-333	10TS-T33
C8	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C9	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C10	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C11	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C12	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C13	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C14	3000		DI-3000	DD-302	BYA10D3	CCD-302	B-230	10TS-D30
C15	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C16	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C17	330		DI-330	DD-331	LI0T33	CCD-331	B-333	10TS-T33
C18	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C19	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C20	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C21	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C22	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C23	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C24	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C25	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50
C26	.05 400V		P488N-05	DD-503	CUB4S5	4DP-3-503	GEM-415	4TM-S50

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	REPLACEMENT DATA SYLVANIA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1	3.3meg*		153-0128					Volume, Channel 1
R2	3.3meg*		153-0128					Volume, Channel 2
R3A	5meg		153-0253	B-88	AD47-5meg-S		FA56A	Treble, Channel 1
B	5meg			SR-88	Not Req.		RU56A	Treble, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	5meg		153-0253	B-88	AD47-5meg-S		FA56A	Bass, Channel 1
B	5meg			SR-88	Not Req.		RU56A	Bass, Channel 2
C	Shaft			Not Req.	KSS-3		CS3500	

* Taps @ 1meg & 2meg. Tap #2 not used.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	100K			
R6	6.8meg			
R7	100K			
R8	47K			
R9	27K			
R10	47K			
R11	2.2meg			
R12	47K			
R13	2200Ω			
R14	47K			
R15	470K			
R16	33Ω			
R17	470K			
R18	100K			
R19	6.8meg			
R20	100K			

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R21	47K			
R22	27K			
R23	47K			
R24	2.2meg			
R25	2200Ω			
R26	47K			
R27	47K			
R28	470K			
R29	33Ω			
R30	470K			
R31	27K			
R32	470Ω 1W			
R33	50Ω 5W	PW5-50	5W-SQ-50	
R34	25Ω 10W	PW10-25	10W-SQ-25	
R35	25Ω 10W	PW10-25	10W-SQ-25	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	SYLVANIA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	5900Ω CT	8Ω(Not Used) Tap ⓐ 3-4Ω	143-0106				S-29X ①	① Drill new mounting holes.
T2	5900Ω CT	8Ω (Not Used) Tap ⓐ 3-4Ω	143-0106				S-29X ①	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	SYLVANIA PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	539-0512	5A07R	
SP2	6"	PM	3-4Ω	539-0616	6A15	
SP3	5"	PM	3-4Ω	539-0512	5A07R	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	SYLVANIA PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.180A	517-0024	1N1763	40H	SR500	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

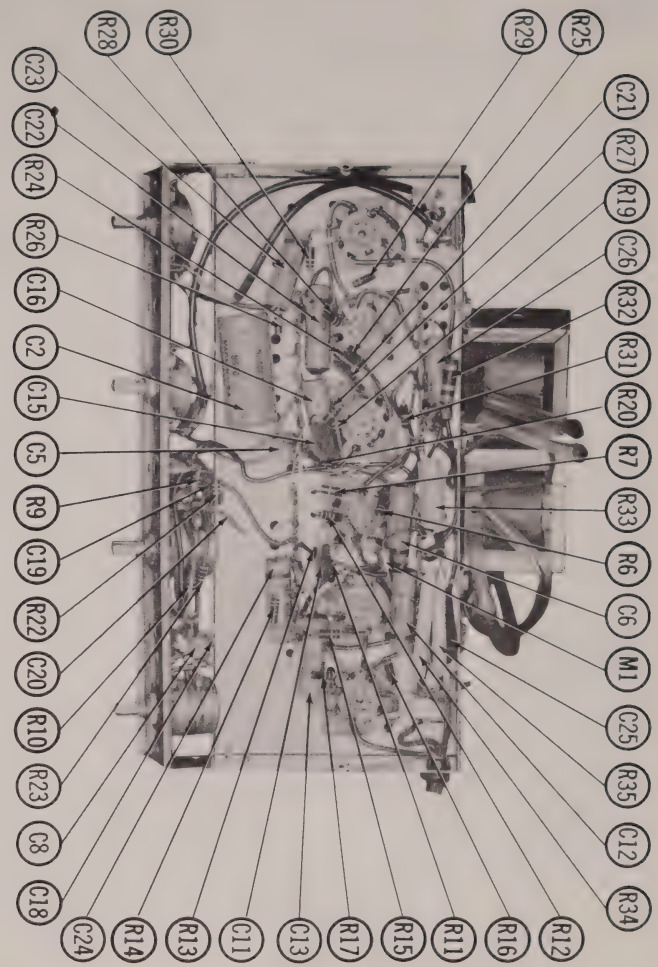
ITEM No.	REPLACEMENT DATA								NOTES
	SYLVANIA PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2	916-0025	902-0023* (LP)	80TS	N8-3 *	26S	S1-1 *	8TA4-S	N-8TA-S *	
		902-0022* (78RPM)		N7-7 *		S3-3 *			

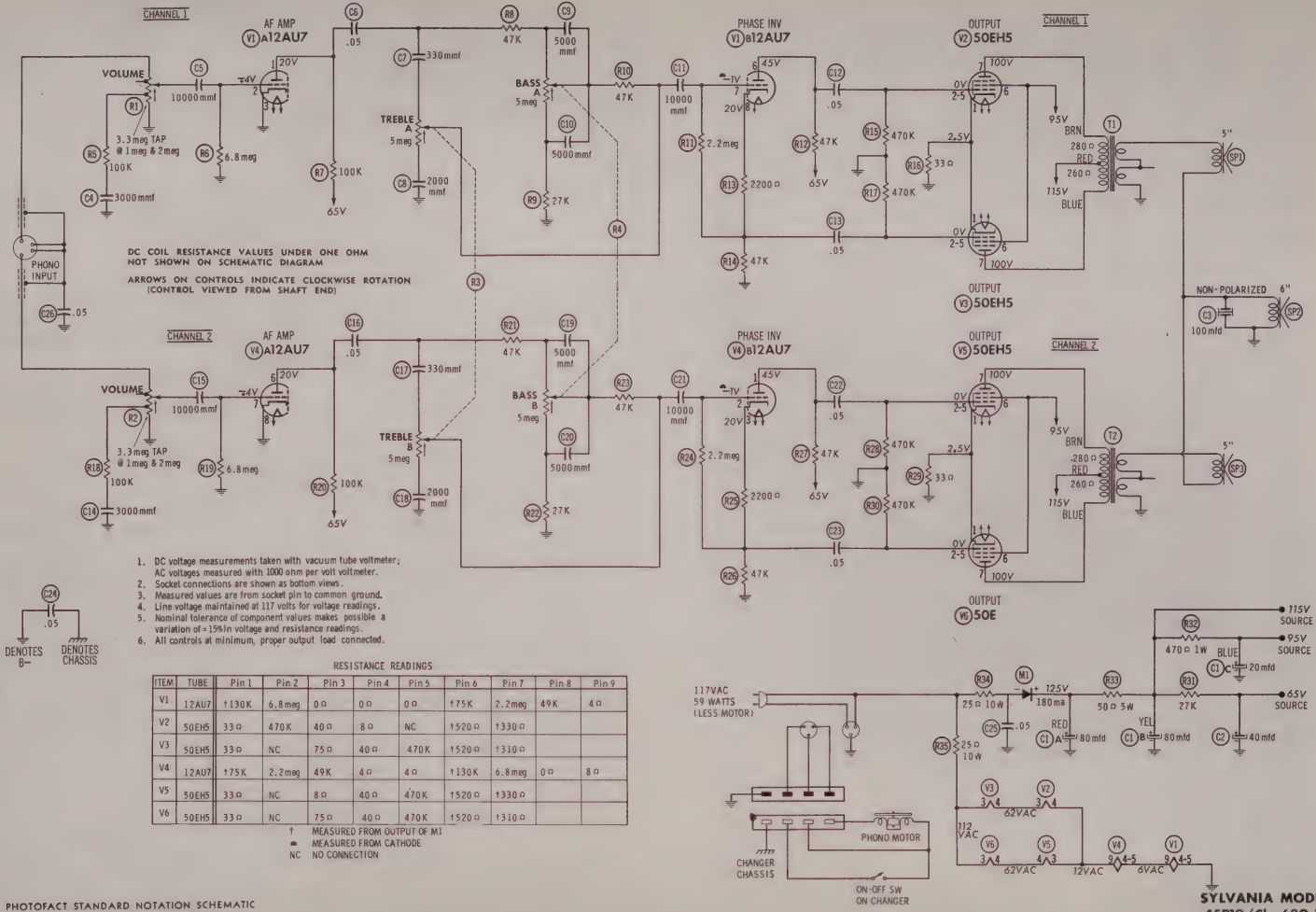
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Spindle	922-0018	45RPM
Knob	740-0431	Volume, Bass, Treble
Knob	954-0025	Cartridge Turnover
Knob	954-0026	Reject
Knob	954-0027	Speed Selector

CHASSIS—BOTTOM VIEW





DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AU7	†130K	6.8meg	0Ω	0Ω	0Ω	†75K	2.2meg	49K	4Ω
V2	50EH5	33Ω	470K	40Ω	8Ω	NC	†520Ω	†330Ω		
V3	50EH5	33Ω	NC	75Ω	40Ω	470K	†520Ω	†310Ω		
V4	12AU7	†75K	2.2meg	49K	4Ω	4Ω	†130K	6.8meg	0Ω	8Ω
V5	50EH5	33Ω	NC	8Ω	40Ω	470K	†520Ω	†330Ω		
V6	50EH5	33Ω	NC	75Ω	40Ω	470K	†520Ω	†310Ω		

† MEASURED FROM OUTPUT OF M1
● MEASURED FROM CATHODE
NC NO CONNECTION

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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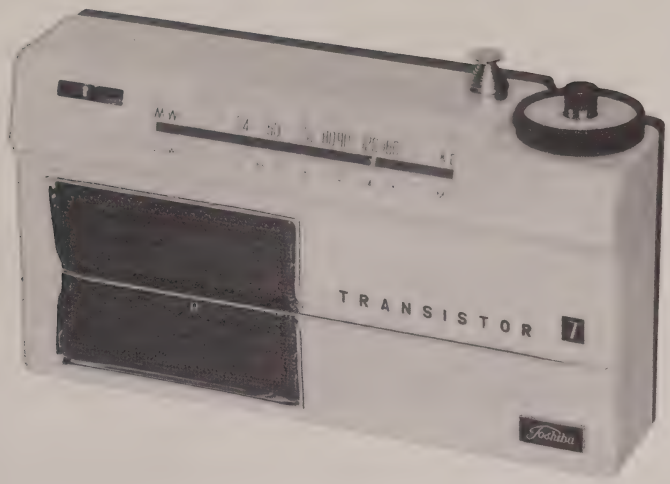
SYLVANIA MODEL 45P19 (Ch. 680-1)

PHOTOFACT® Folder with CIRCUITRACE®

TOSHIBA MODEL 7TM-312S

TOSHIBA MODEL 7TM-312S



TOSHIBA MODEL 7TM-312S

TRADE NAME	Toshiba Model 7TM-312S
IMPORTER	Transistor World Corp., 52 Broadway, New York 4, N. Y.
TYPE SET	Battery Operated Transistorized Portable BC-SW Receiver
POWER SUPPLY	6 Volts DC
RATING	8MA@6 Volts DC (No Signal, Min. Volume)
	15MA@6 Volts DC (Signal, Normal Volume)
TUNING RANGE—BROADCAST	540 — 1600KC
SHORT WAVE	5.9 — 18MC

ALIGNMENT INSTRUCTIONS

ALIGNMENT INSTRUCTIONS—READ CAREFULLY BEFORE ATTEMPTING ALIGNMENT

Volume control should be at maximum position. Output of signal generator should be no higher than necessary to obtain an output reading.

Suggested Alignment Tools:
A1, A2, A3, A5.....GENERAL CEMENT #5000, 5003, 5066, 8276, 8290, 9087, 9089
WALSCO #2512, 2525, 2528
A4, A6, A7, A10..... GENERAL CEMENT #5009, 8195, 8274, 8275, 8728, 8729, 8987, 8988, 8989
WALSCO #2515, 2531, 2532
A9..... GENERAL CEMENT #8721, 8722
WALSCO #2519

	SIGNAL GENERATOR COUPLING	SIGNAL GENERATOR FREQUENCY	RADIO DIAL SETTING	OUTPUT METER	ADJUST	REMARKS
1.	Loop	455KC (400% Mod.)	(MW) Tuning gang fully open.	Across voice coil.	A1, A2, A3	Fashion loop of several turns of wire and radiate signal into loop of receiver. Adjust for maximum output.
2.	"	1600KC	1600KC	"	A4	"
3.	"	600KC	600KC	"	A5	"
4.	"	1400KC	1400KC Signal.	"	A6	"
5.	"	18MC	(SW) 18MC	"	A7	"
6.	"	6MC	6MC	"	A8, A9	"
7.	"	16MC	16MC Signal.	"	A10	Adjust for maximum output. Repeat Steps 2 thru 7.

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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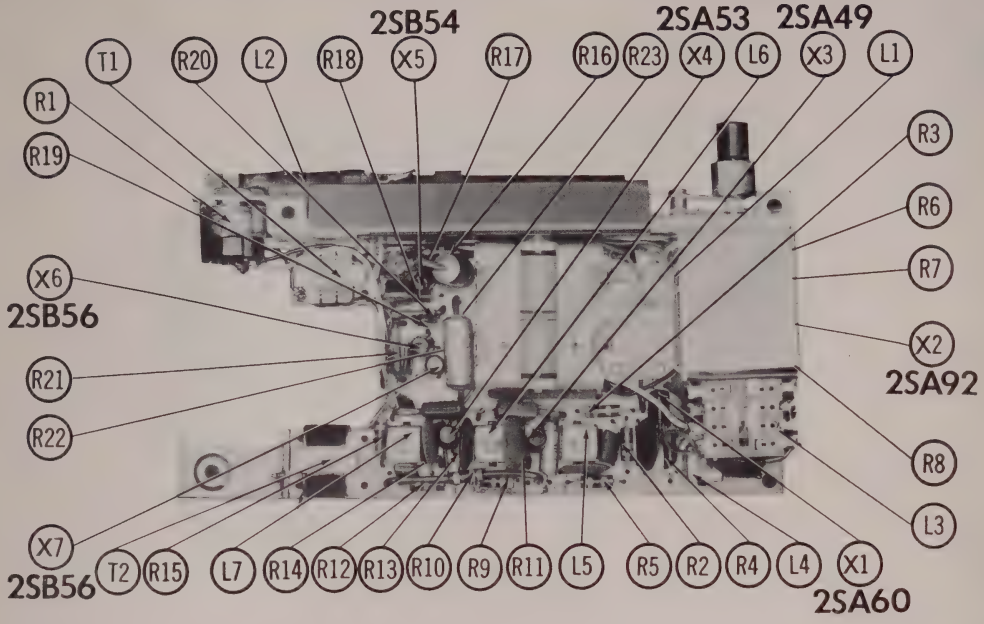
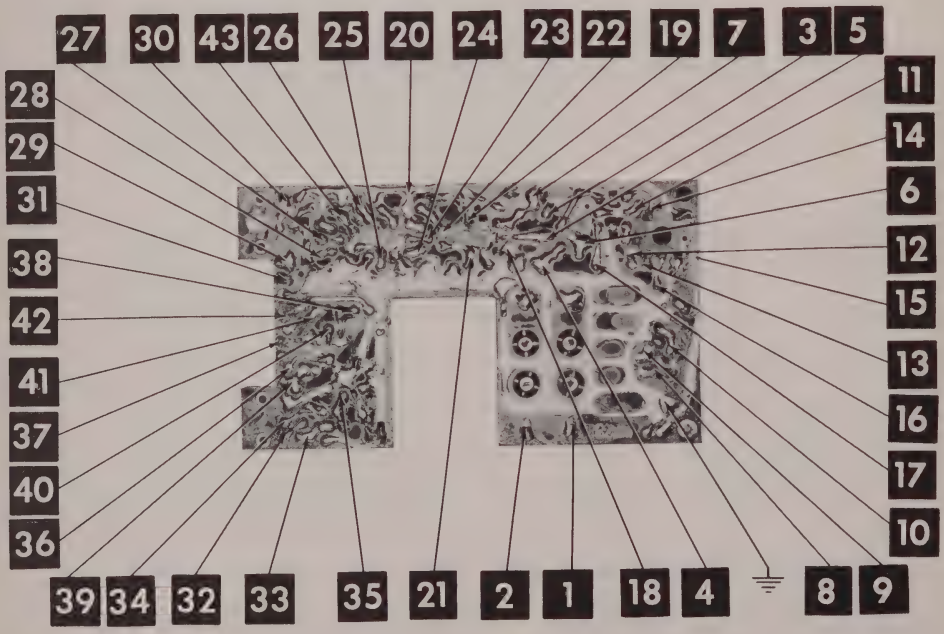
KF706

SET 542 FOLDER 15

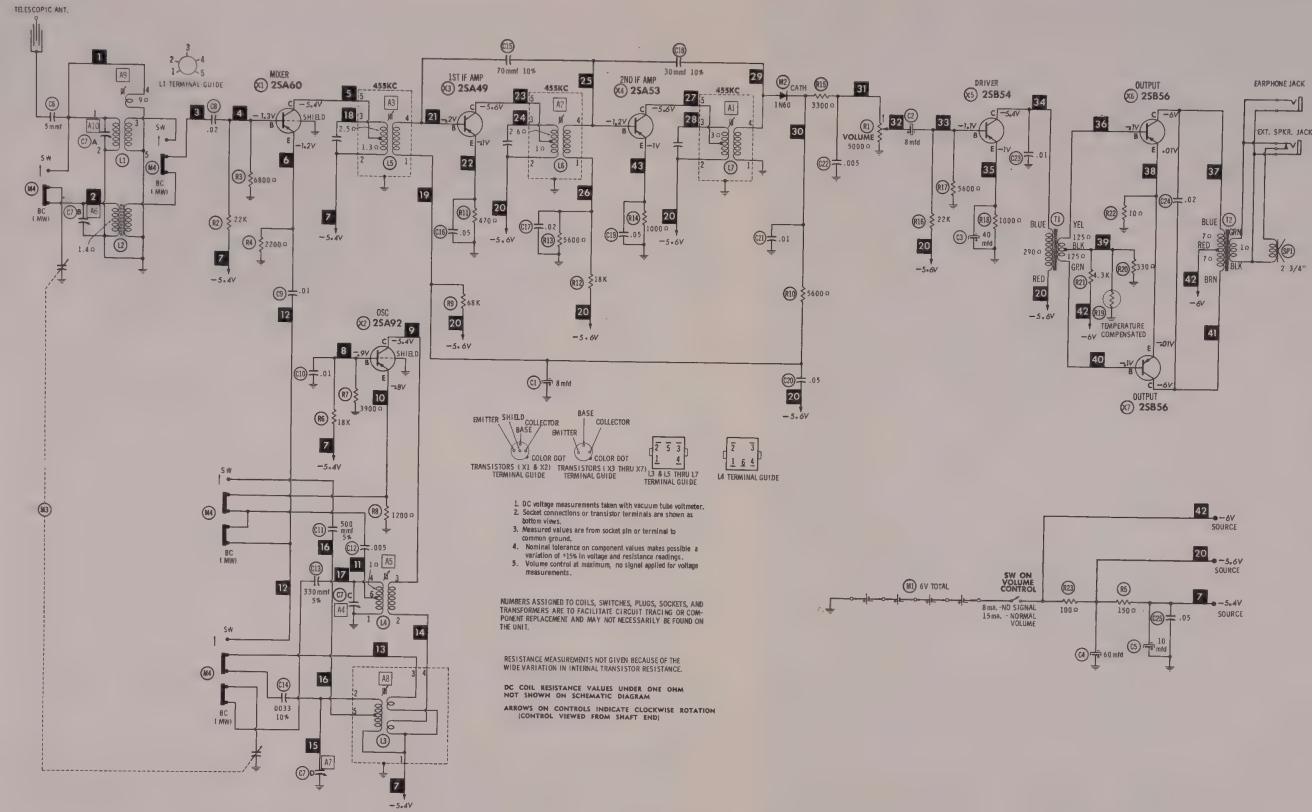


CHASSIS TOP VIEW-RESISTOR, INDUCTOR & TRANSISTOR IDENT.



A Howard W. Sams CIRCUITRACE® Photo

PRINTED BOARD



1. DC voltage measurements taken with vacuum tube voltmeter.
2. Socket connections or transistor terminals are shown as bottom views.
3. Measured values are from socket pin or terminal to common ground.
4. Nominal tolerance on component values makes possible a variation of ±15% in voltage and resistance readings.
5. Volume control at maximum, no signal applied for voltage measurements.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

RESISTANCE MEASUREMENTS NOT GIVEN BECAUSE OF THE WIDE VARIATION IN INTERNAL TRANSISTOR RESISTANCE.

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM.

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC with CIRCUITRACE

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TOSHIBA MODEL 7TM-3125

PARTS LIST AND DESCRIPTIONS

TRANSISTORS

ITEM No.	ORIG. TYPE	USE	REPLACEMENT DATA			NOTES
			RCA PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
X1	2SA60	Mixer				PNP
X2	2SA92	Oscillator				PNP
X3	2SA49	1st IF Amplifier				PNP
X4	2SA53	2nd IF Amplifier				PNP
X5	2SB54	Driver	2N406			PNP
X6	2SB56	Output	2N408			PNP
X7	2SB56	Output	2N408			PNP

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						NOTES
	CAP.	VOLT.	TOSHIBA PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	
C1	8	3		PTT5	NLW8-10	TT6X8	MLV10-3	TE-1052.5	
C2	8	3		PTT5	NLW8-10	TT6X8	MLV10-3	TE-1052.5	
C3	40	3		PTT11	NLW40-3	TT3X40	MLV40-3	TE-1057	
C4	60	6		PTT29	NLW75-10	TT6X60	MLV50-6	TE-1101	
C5	10	6		PTT23	NLW10-6	TT6X10	MLV10-6	TE-1087	

FIXED CAPACITORS

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C6	5		NPO-DI 5.0	DTZ-4R7	C10V5C	CCTO-050	CNO-547	10TCC-V50
C7A								
B								
C								
D								
C8	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C9	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C10	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C11	500 5%		1469-00005		5R5T5	CM-19B-501J	MCE245	MS-35
C12	.005		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C13	330 5%		1469-00033		5R5T33	CM-19B-331J		MS-333
C14	.0033 10%		1464-00033		1R5D33	CM-19B-332K	MCJ462	MS-233
C15	70 10%		1469-00007	TCZ-68	22R5Q7	CM-19B-680J	CNO-468	MS-47
C16	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C17	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C18	30 10%		1469-00003	TCZ-30	22R5Q3	CM-19B-300K	CNO-433	MS-43
C19	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C20	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50
C21	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C22	.005		C80V502AM	DM-502	H-05D5	CCD-502	TA-250	TG-D50
C23	.01		C80V103AM	DM-103	H-05S1		TA-110	TG-S10
C24	.02		C80V203AM	DA-203	H-05S2		TA-120	TG-S20
C25	.05		C80V503AM	DA-503	H-05S5		TA-150	TG-S50

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TOSHIBA PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1	5000Ω	1/2						Volume & Switch

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA			ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS			IRC PART No.	WORKMAN TV PART No.	REMARKS
R2	22K				R13	5600Ω			
R3	6800Ω				R14	1000Ω			
R4	2200Ω				R15	3300Ω			
R5	150Ω				R16	22K			
R6	18K				R17	5600Ω			
R7	3900Ω				R18	1000Ω			
R8	1200Ω				R19	Temp. Comp.			
R9	68K				R20	330Ω			
R10	5600Ω				R21	4300Ω			
R11	470Ω				R22	10Ω			
R12	18K				R23	100Ω			

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		TOSHIBA PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	SW Ant.						
L2	Loopstick						
L3	SW Osc.						
L4	BC Osc.						
L5	1st IF						
L6	2nd IF						
L7	3rd IF						

TRANSFORMER (DRIVER)

ITEM No.	TURNS RATIO		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TOSHIBA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	1.5	1	0513A		TA-28			

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	TOSHIBA PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	500Ω CT	10-12Ω	0574A					

PARTS LIST AND DESCRIPTIONS (Continued)

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TOSHIBA PART No.	QUAM PART No.	
SP1	2 3/4"	PM	10-12Ω	SP-3003C	27A06Z12	

BATTERIES

ITEM No.	VOLTAGE	TOSHIBA PART No.	REPLACEMENT DATA						NOTES
			BURGESS		EVEREADY		MALLORY		
			"A"	"B"	"A"	"B"	"A"	"B"	
M1	1.5V	UM-3A		930		1015		M-15R	4 Required

SIGNAL DIODES

ITEM No.	ORIG. TYPE	REPLACEMENT DATA				NOTES
		TOSHIBA PART No.	GENERAL ELECTRIC PART No.	RAYTHEON PART No.	SYLVANIA PART No.	
M2	1N60			1N60	1N60	Detector (Pigtail)

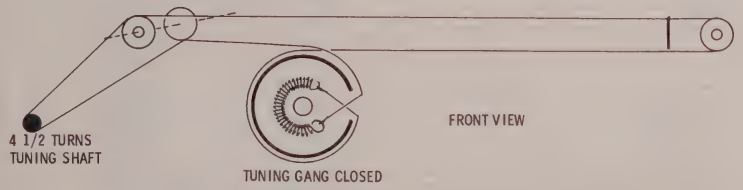
MISCELLANEOUS

ITEM No.	PART NAME	TOSHIBA PART No.	NOTES
M3 M4	Tuning Cap., Switch		2 Gang Band Selector (Slide Type)

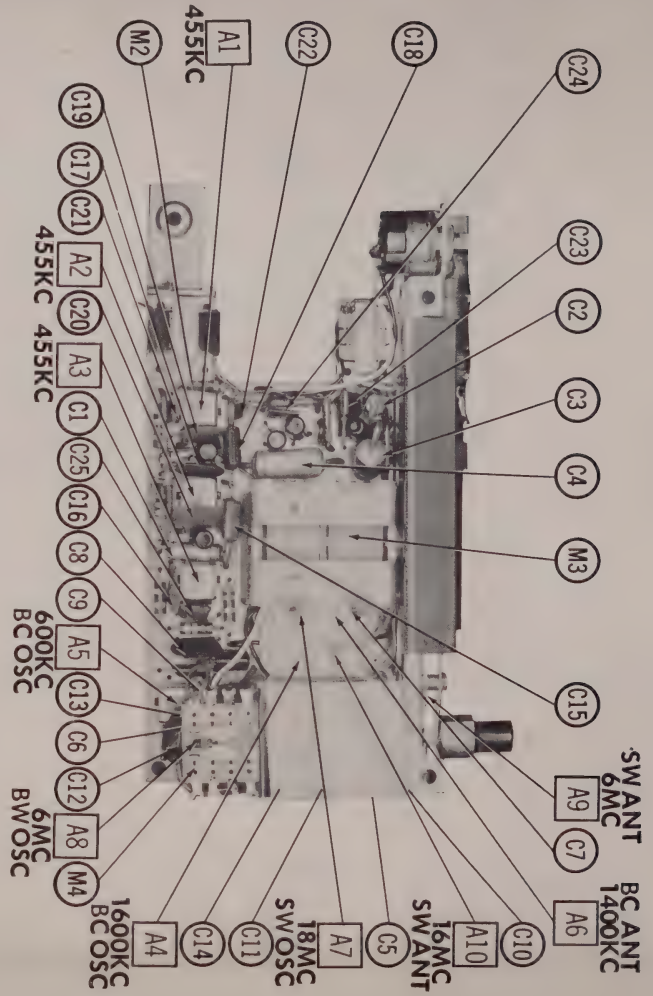
WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors

DIAL CORD STRINGING



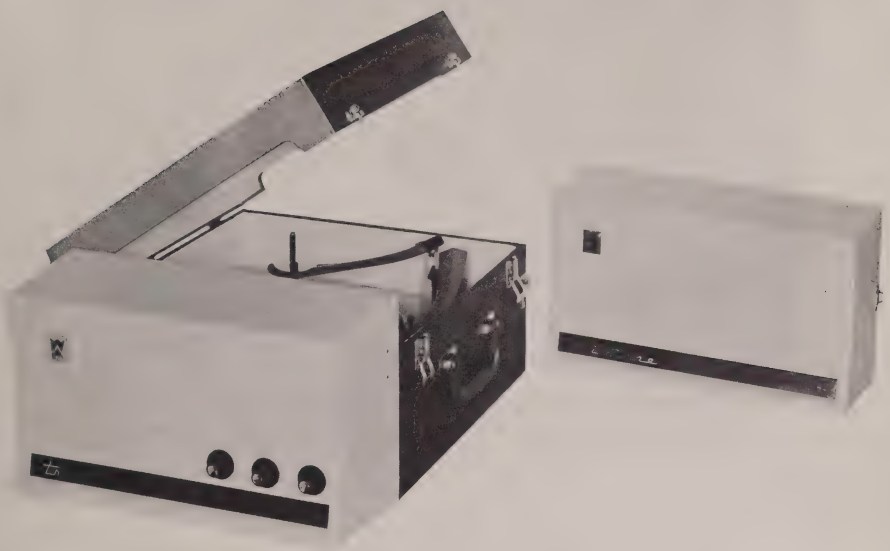
CHASSIS—TOP VIEW



PHOTOFACT® Folder

TRUETONE MODEL 4DC6133A

TRUETONE MODEL 4DC6133A



TRUETONE MODEL 4DC6133A

TRADE NAME	Truetone Model 4DC6133A
SUPPLIER	Western Auto Supply Co., 2107 Grand Ave., Kansas City 8, Missouri
TYPE SET	AC Operated 4 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 – 120 Volts AC, 60 Cycles RATING 33 Watts, .36 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER – SEE SIMILAR V-M 1201 – PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

SET 542 FOLDER 16

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

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KT500

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

• GENERAL ELECTRIC • RAYTHEON • SYLVANIA •					
ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7 (ECC83)(7025)*	V3	Channel 1 Output	50L6GT
V2	Channel 1 AF Amp. - Channel 2 AF Amp.	12AX7 (ECC83)(7025)*	V4	Channel 2 Output	50L6GT

* Alternate

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	TRUETONE PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	100	150	150-154	PRS2240	BBRD0183.7	WD235	TDLD-14	TVA-2462	
B	50	150							
C2A	40	150	150-151①	PR4-200	BBRQ0174	WQ795	CDBQ-4422	TVA-4750	
B	40	150							
C	20	150							
D	20	150							

① Alternate Part #150-153.

FIXED CAPACITORS

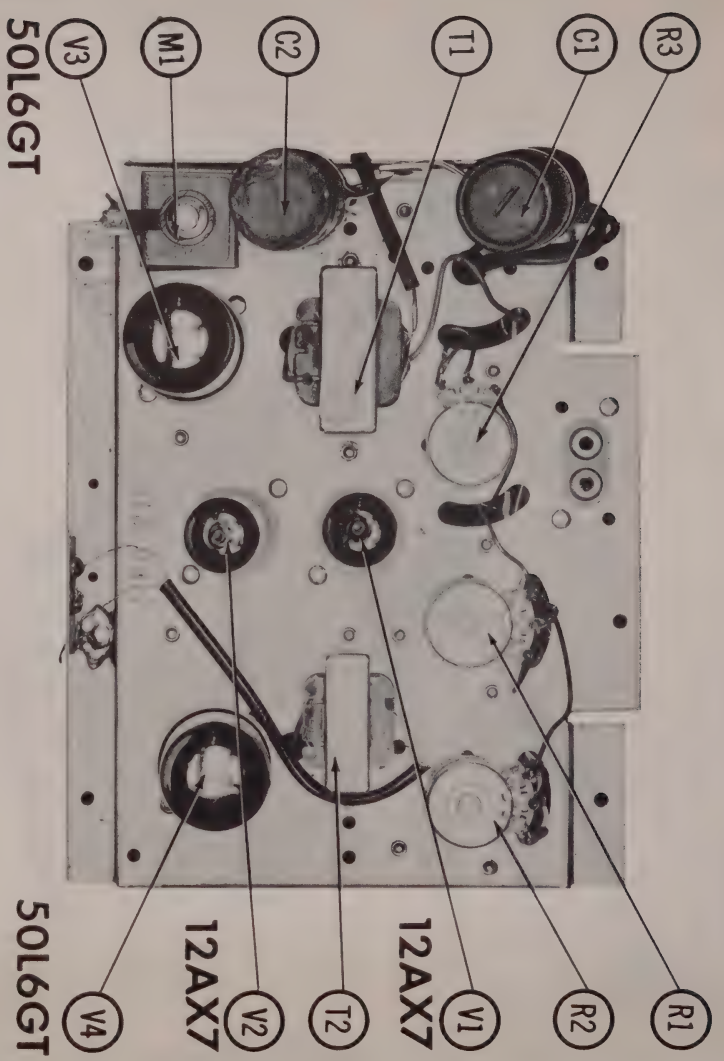
Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C3	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C4	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C5	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C6	560 10%		1469-00056		5R5T56	CM-19B-561K	MCJ247	MS-356
C7	.05 200V		P288N-05	DD-503	CUB2S5	4DP-3-503	GEM-415	2TM-S50
C8	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C9	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C10	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C11	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	2TM-S20
C12	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	.02 400V		P488N-02	DD-203	CUB4S2	4DP-2-203	GEM-412	4TM-S20
C14	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C15	.1 400V		P488N-1	DF-104	CUB4P1	4DP-3-103	GEM-401	4TM-P10

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	TRUETONE PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg	½	120-165	B-76	AD47-2meg-Z		FA26A	Loudness, Channel 2
B	2meg	½		SR-76	Not Req.		RU26A	Loudness, Channel 1
C	Shaft			Not Req.	FS-3		CS3500	
R2A	100K	½	120-166A	B-40	AD47-100K-S		FA15A	Tone, Channel 1
B	100K	½		SR-40	Not Req.		RU15A	Tone, Channel 2
C	Shaft			Not Req.	FS-3		CS3500	
R3A	1meg	½	120-167A	B-69	AD47-1meg-S	Q11-137	U54	Balance
B	Shaft			Not Req.	FS-3	Not Req.	Not Req.	

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R4	470K			
R5	330K			
R6	56K			
R7	1000Ω			
R8	220K			
R9	100K			
R10	56K			
R11	680Ω			
R12	6800Ω			
R13	470K			
R14	1000Ω			
R15	150Ω			
R16	22K			
R17	470K			
R18	330K			
R19	56K			
R20	1000Ω			
R21	220K			
R22	100K			
R23	56K			
R24	680Ω			
R25	470K			
R26	1000Ω			
R27	150Ω			
R28	22K			
R29	47Ω 1W			
R30	33Ω			Fuse Type
R31	10Ω 3W	PW5-10	5W-SQ-10	

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	TRUETONE PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	3700Ω Tap @ 2.4%	3-4Ω	138-158					
		SEC. 2						
		230Ω						
T2	2500Ω	3-4Ω	138-159	A-3025	A-3332	24S53	S-12X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	TRUETONE PART No.	QUAM PART No.	
SP1	5"	PM	3-4Ω	175-168	5A1	
SP2	4"	PM	3-4Ω	175-169	4A07	

POWER RECTIFIERS

ITEM No.	RATING	REPLACEMENT DATA				NOTES
	CURRENT (Measured)	TRUETONE PART No.	RCA PART No.	SARKES TARZIAN PART No.	SYLVANIA PART No.	
M1	.090A	265-102 *	1N1763 ♦	150 *	SR200 ♦	* Selenium ♦ Silicon

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

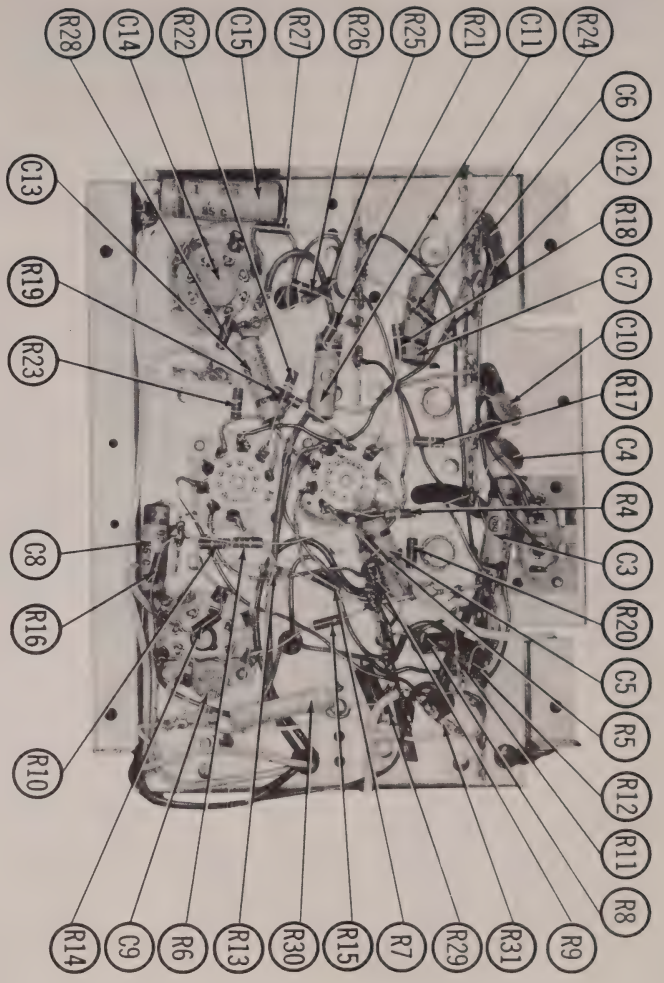
ITEM No.	REPLACEMENT DATA								NOTES
	TRUETONE PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M2			13T	Not Req.	13	Not Req.	10TB2-S	Not Req.	

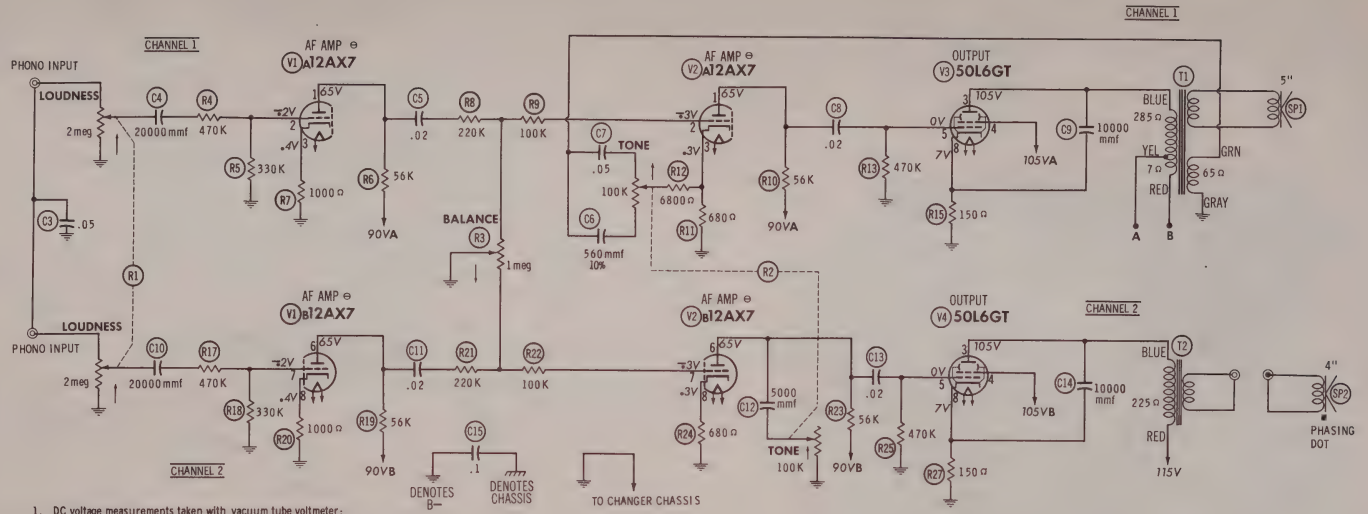
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	220-172A	Black With Silver Insert
Cabinet	212-108	Complete
Cabinet	500-138	Changer Section
Cabinet	210-171H	Chassis Section
Cabinet	210-172H	Speaker Section

CHASSIS—BOTTOM VIEW



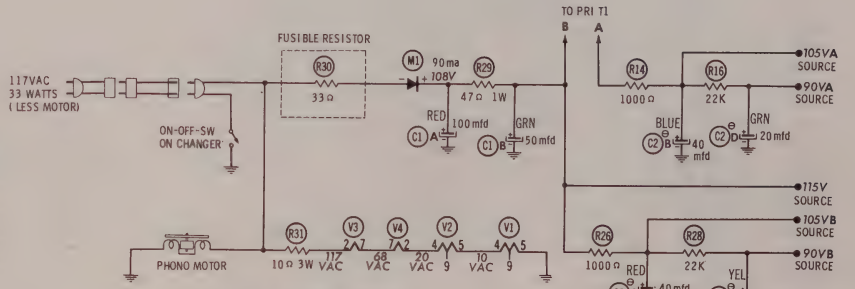


1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7	†80K	330K	1000Ω	10Ω	0Ω	†80K	330K	1000Ω	NC
V2	12AX7	†80K	600K	680Ω	20Ω	10Ω	†80K	600K	680Ω	NC
V3	50L6GT	NC	100Ω	†340Ω	†1000Ω	470K	TP	60Ω	150Ω	
V4	50L6GT	NC	20Ω	†270Ω	†1000Ω	470K	NC	60Ω	150Ω	

† MEASURED FROM OUTPUT OF M1. NC NO CONNECTION TP TIE POINT



SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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TRUETONE MODEL 4DC6133A

PHOTOFACT® Folder

V-M MODELS
816, 817

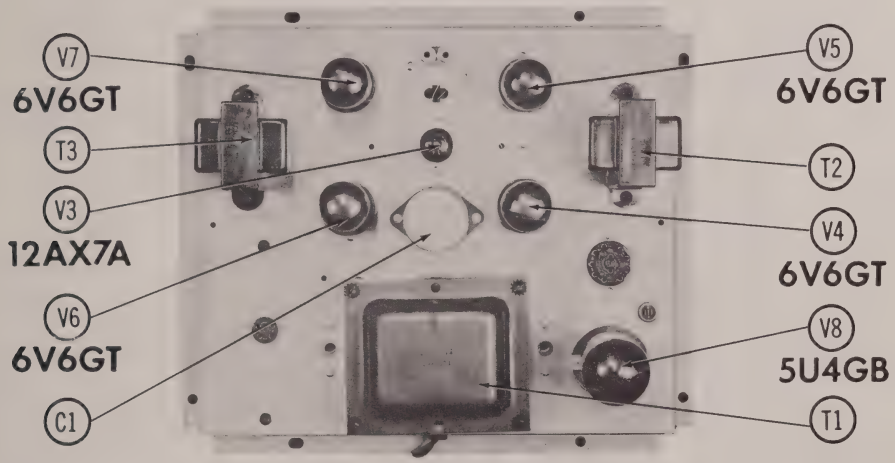
V-M MODELS
816, 817

MODEL 817

TRADE NAME	V-M Models 816, 817
MANUFACTURER	V-M Corp., 375 W. Main Street, Benton Harbor, Michigan
TYPE SET	AC Operated 8 Tube Stereo Phono Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	110 -120 Volts AC, 60 Cycles RATING 110 Watts, 1 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER — SEE V-M 1586 — PHOTOFACT SET 527 FOLDER 14

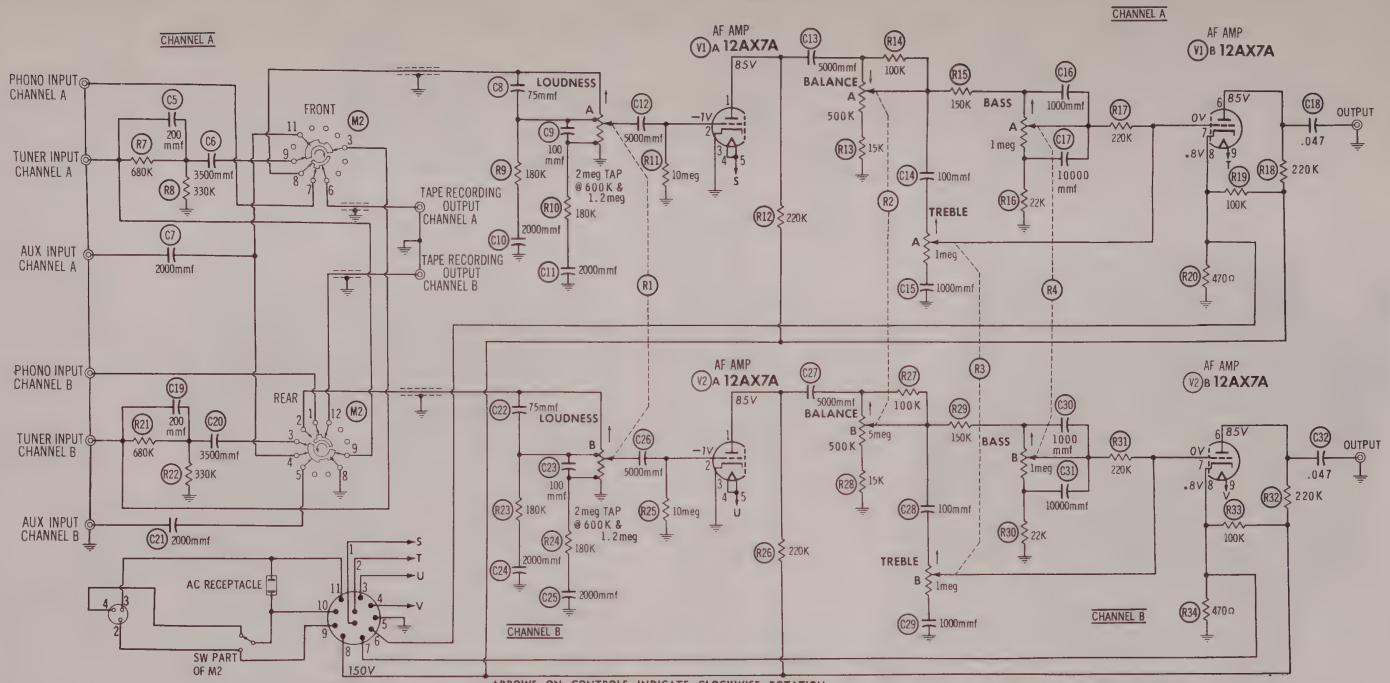
V-M MODELS
816, 817



HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of KT542

the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America



ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

SELECTOR SW (M2) SHOWN IN "PHONO" POSITION.
SW SEQUENCE:
1. PHONO
2. OFF
3. ON } RADIO
4. MON
5. STEREO } AUX

RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	12AX7A	†245K	10meg	0Ω	FILS	FILS	†245K	250K	470Ω	FILS
V2	12AX7A	†245K	10meg	0Ω	FILS	FILS	†245K	250K	470Ω	FILS

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT
† MEASURED FROM PIN 8 OF V8

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

NUMBERS ASSIGNED TO COILS, SWITCHES, PLUGS, SOCKETS, AND TRANSFORMERS ARE TO FACILITATE CIRCUIT TRACING OR COMPONENT REPLACEMENT AND MAY NOT NECESSARILY BE FOUND ON THE UNIT.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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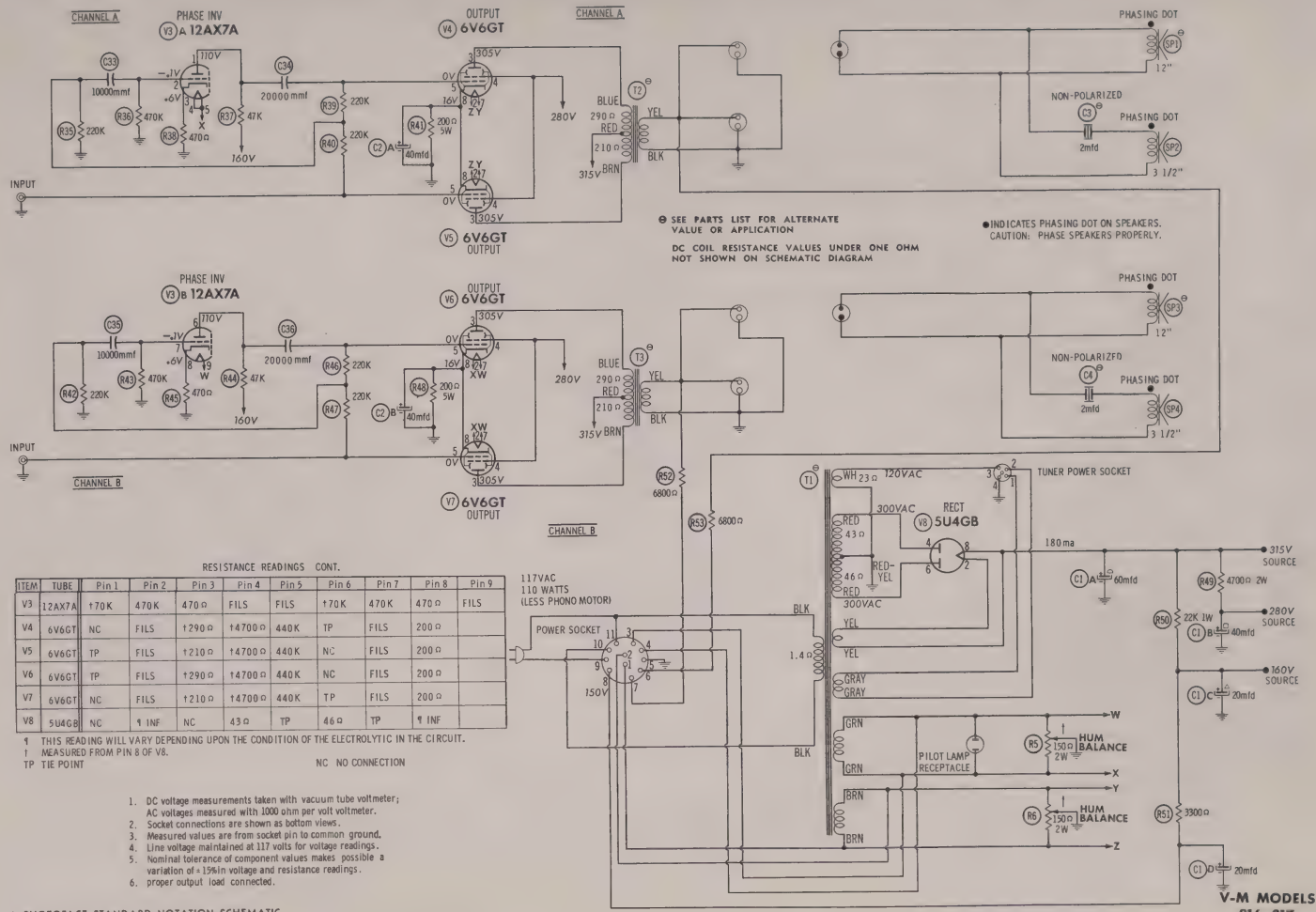
V-M MODELS 816, 817

PRE AMP SCHEMATIC



RESISTANCE READINGS CONT.

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V3	12AX7A	†70K	470K	470Ω	FILS	FILS	†70K	470K	470Ω	FILS
V4	6V6GT	NC	FILS	†290Ω	†4700Ω	440K	TP	FILS	200Ω	
V5	6V6GT	TP	FILS	†210Ω	†4700Ω	440K	NC	FILS	200Ω	
V6	6V6GT	TP	FILS	†290Ω	†4700Ω	440K	NC	FILS	200Ω	
V7	6V6GT	NC	FILS	†210Ω	†4700Ω	440K	TP	FILS	200Ω	
V8	5U4GB	NC	¶ INF	NC	43Ω	TP	46Ω	TP	¶ INF	

¶ THIS READING WILL VARY DEPENDING UPON THE CONDITION OF THE ELECTROLYTIC IN THE CIRCUIT.
† MEASURED FROM PIN 8 OF V8.
TP TIE POINT NC NO CONNECTION

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of components values makes possible a variation of ± 15% in voltage and resistance readings.
6. proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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V-M MODELS 816, 817

AMP SCHEMATIC

PARTS LIST AND DESCRIPTIONS

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Channel A AF Amp.	12AX7A	V5	Channel A Output	6V6GT
V2	Channel B AF Amp.	12AX7A	V6	Channel B Output	6V6GT
V3	Channel A Phase Inv. - Channel B Phase Inv.	12AX7A	V7	Channel B Output	6V6GT
V4	Channel A Output	6V6GT	V8	Rectifier	5U4GB

ELECTROLYTIC CAPACITORS

ITEM No.	RATING		REPLACEMENT DATA						
	CAP.	VOLT.	V-M PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▰60	450	12125	AFH4-18-30	D0177.4	FP448	TMQ-4655	TVL-4778	
B	■40	450							
C	▲20	450							
D	20	450							
C2A	40	25	12139	PRS2195	BBRD4415	TCD48	TDLD-7	TVA-2445	
B	40	25							
C3	2	25NP	12130	PRS7300	BBR4-150	TCN502		TVANS-1202*	①
C4	2	25NP	12130	PRS7300	BBR4-150	TCN502		TVANS-1202*	①

① Model 816 uses 4mfd in this application (Part #12120).
* Not normally in distributor's stock. Available thru distributor on order to manufacturer.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C5	200		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C6	3500		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C7	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C8	75			DD-750	L10Q75	CCD-750	GP475	10TS-Q75
C9	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C10	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C11	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C12	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C13	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C14	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C15	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10

FIXED CAPACITORS (cont)

ITEM No.	RATING	REMARKS	REPLACEMENT DATA					
			AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C16	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C17	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C18	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C19	200		DI-200	DD-201	L10T2	CCD-201	GP320	10TS-T20
C20	3500		BPD-0033	DD-332	BYA10D33	CCD-332	B-233	5HK-D33
C21	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C22	75			DD-750	L10Q75	CCD-750	GP475	10TS-Q75
C23	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C24	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C25	2000		BPD-002	DD-202	BYA10D2	CCD-202	B-220	5HK-D20
C26	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C27	5000		BPD-005	DD-502	BYA10D5	CCD-502	B-250	5HK-D50
C28	100		BPD-0001	DD-101	L10T1	CCD-101	GP310	10TS-T10
C29	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C30	1000		BPD-001	DD-102	BYA10D1	CCD-102	B-210	5HK-D10
C31	10000		BPD-01	DD-102	BYA10S1	CCD-103	B-110	5HK-S10
C32	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C33	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C34	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20
C35	10000		BPD-01	DD-103	BYA10S1	CCD-103	B-110	5HK-S10
C36	20000		BPD-02	DD-203	BYB6S2	CCD-203	B-120	5HK-S20

CONTROLS

ITEM No.	RATING		REPLACEMENT DATA					INSTALLATION NOTES
	RESISTANCE	WATTS	V-M PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	
R1A	2meg *		12398	BT-175				Loudness, Channel A
B	2meg *			STR-175				Loudness, Channel B
R2A	500K		12399	B-59	AD47-500K-S		FA55L	Balance, Channel A
B	500K			SR-59	Not Req.		RU55L	Balance, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R3A	1meg		12400	B-70	AD47-1meg-Z		FA16A	Treble, Channel A
B	1meg			SR-70	Not Req.		RU16A	Treble, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R4A	1meg		12401	B-70	AD47-1meg-Z		FA16A	Bass, Channel A
B	1meg			SR-70	Not Req.		RU16A	Bass, Channel B
C	Shaft			Not Req.	KSS-3		CS3500	
R5A	150Ω	2(WW)	12361	WN-201	A43-150	WPK-200	FL200P	Hum Balance, Channel A
B	Shaft			AK-30	FKS-1/4	Not Req.	Not Req.	
R6A	150Ω	2(WW)	12361	WN-201	A43-150	WPK-200	FL200P	Hum Balance, Channel B
B	Shaft			AK-30	FKS-1/4	Not Req.	Not Req.	

* Taps ⓐ 600K & 1.2meg.

PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R7	680K			
R8	330K			
R9	180K			
R10	180K			
R11	10meg			
R12	220K			
R13	15K			
R14	100K			
R15	150K			
R16	22K			
R17	220K			
R18	220K			
R19	100K			
R20	470Ω			
R21	680K			
R22	330K			
R23	180K			
R24	180K			
R25	10meg			
R26	220K			
R27	100K			
R28	15K			
R29	150K			
R30	22K			
R31	220K			
R32	220K			
R33	100K			
R34	470Ω			
R35	220K			
R36	470K			
R37	47K			
R38	470Ω			
R39	220K			
R40	220K			
R41	200Ω 5W	PW5-200	5W-SQ-200	
R42	220K			
R43	470K			
R44	47K			
R45	470Ω			
R46	220K			
R47	220K			
R48	200Ω 5W	PW5-200	5W-SQ-200	
R49	4700Ω 2W			
R50	22K 1W			
R51	3300Ω			
R52	6800Ω			
R53	6800Ω			

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	V-M PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V Ⓐ 1A	580VCT Ⓐ .180A DC	5V Ⓐ 3A	12668-1 ①					① Alternate Part # 12668
	SEC. 3	SEC. 4	SEC. 5						
	120V (Not Used)	6.3V (Not Used)	6.3V Ⓐ 1.5A						
	SEC. 6								
	6.3V Ⓐ 1.2A								

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	V-M PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	5500Ω CT	1-2Ω	12612-1 ①	A-2901	A-3823	24S06	S-53X	① Alternate Part #12612
T3	5500Ω CT	1-2Ω	12612-1 ①	A-2901	A-3823	24S06	S-53X	

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	V-M PART No.	QUAM PART No.	
SP1	12"	PM	3-4Ω	19811 *	12A6A	* Part #18560 Used in Model 816
SP2	3½"	PM	3-4Ω	21226	3A15TZ4	
SP3	12"	PM	3-4Ω	19811 *	12A6A	
SP4	3½"	PM	3-4Ω	21226	3A15TZ4	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	V-M PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	16708-J	18626-D *	13TBX	Not Req.	26SD	S1-1* & S3-3*	8TA4-SD	N-8TA-SD *	

MISCELLANEOUS

ITEM No.	PART NAME	V-M PART No.	NOTES
M2	Switch	12437	Function Selector (Rotary Type)
M3	Switch	21338	AC Switch (Part of Phono)
M4	Motor	9134-B	Phono Drive (Part of Phono)

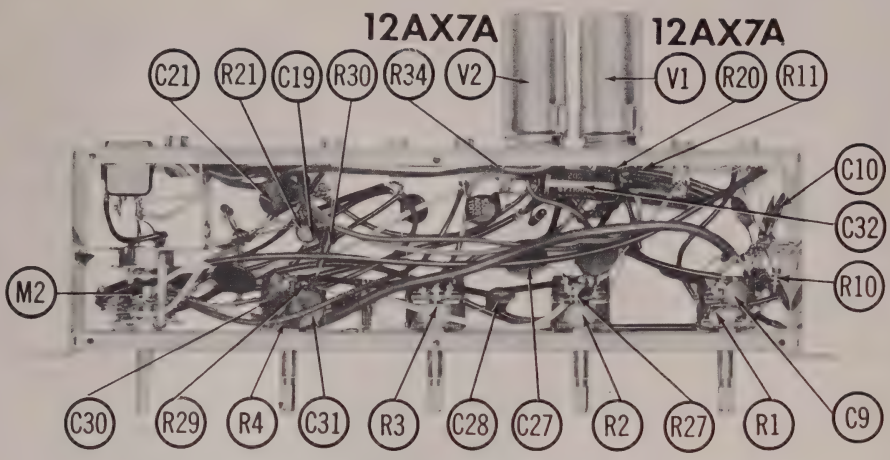
CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	23987-A	Loudness, Bass, Treble
Knob	23988-A	Balance
Knob	23986-A	Function - Selector
Cabinet	24155	Model 816
Cabinet	24152	Model 817

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)


12AX7A
12AX7A
C21
R21
C19
R30
R34
V2
V1
R20
R11
C10
C32
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C30
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R4
C31
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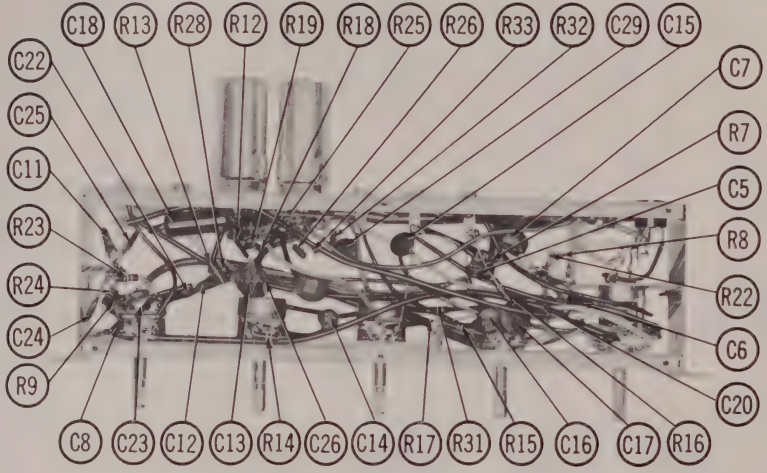
R2
R27
R1
C9


C18
R13
R28
R12
R19
R18
R25
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R24
C24
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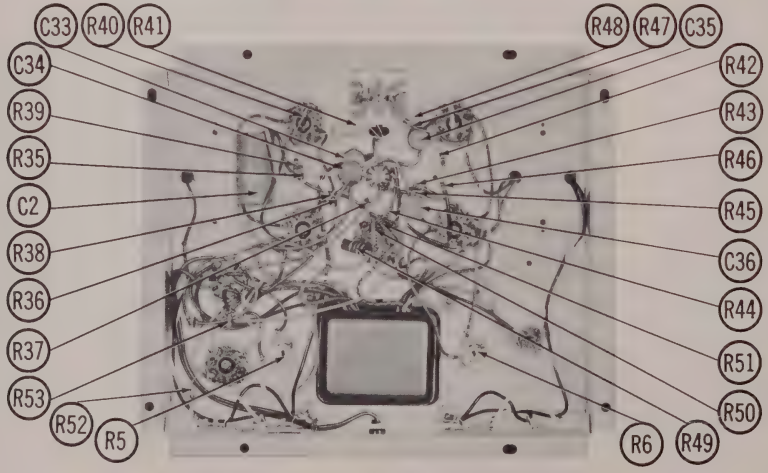
C5
R8
R22
C6
C20
C8
C23
C12
C13
R14
C26
C14
R17
R31
R15
C16
C17
R16


C33
R40
R41
C34
R39
R35
C2
R38
R36
R37
R53
R52
R5
R48
R47
C35
R42
R43
R46
R45
C36
R44
R51
R50
R6
R49

PHOTOFACT® Folder

WESTINGHOUSE MODELS H-F1120, H-F1121, H-F1122, H-F1123 (Ch. V-2512-2)

WESTINGHOUSE MODELS H-F1120, H-F1121, H-F1122, H-F1123 (Ch. V-2512-2)

MODEL H-F1121

WESTINGHOUSE MODELS H-F1120, H-F1121, H-F1122, H-F1123 (Ch. V-2512-2)

TRADE NAME	Westinghouse Models H-F1120, H-F1121, H-F1122, H-F1123 (Ch. V-2512-2)
MANUFACTURER	Westinghouse Electric Corp., Radio-Television Div., Metuchen, N. J.
TYPE SET	AC Operated 5 Tube Stereo Amplifier With 4 Speed Automatic Record Changer
POWER SUPPLY	105-120 Volts AC, 60 Cycles RATING 78 Watts, .78 Amp. @117 Volts AC (Less Motor)

FOR SERVICE INFORMATION ON RECORD CHANGER PART #670V012H01 — SEE V-M 1201 — PHOTOFACT SET 436 FOLDER 18 OR RECORD CHANGER MANUAL RC-12

HOWARD W. SAMS & CO., INC. Indianapolis 6, Indiana

The listing of any available replacement part herein does not constitute in any case a recommendation, warranty or guaranty by Howard W. Sams & Co., Inc., as to the quality and suitability of such replacement part. The numbers of these parts have been compiled from information furnished to Howard W. Sams & Co., Inc., by the manufacturers of the particular type of replacement part listed. Reproduction or use, without express permission, of editorial or pictorial content, in any manner, is prohibited. No patent liability is assumed with respect to the use of the information contained herein. © 1961 Howard W. Sams & Co., Inc., Indianapolis 6, Indiana. Printed in U.S. of America

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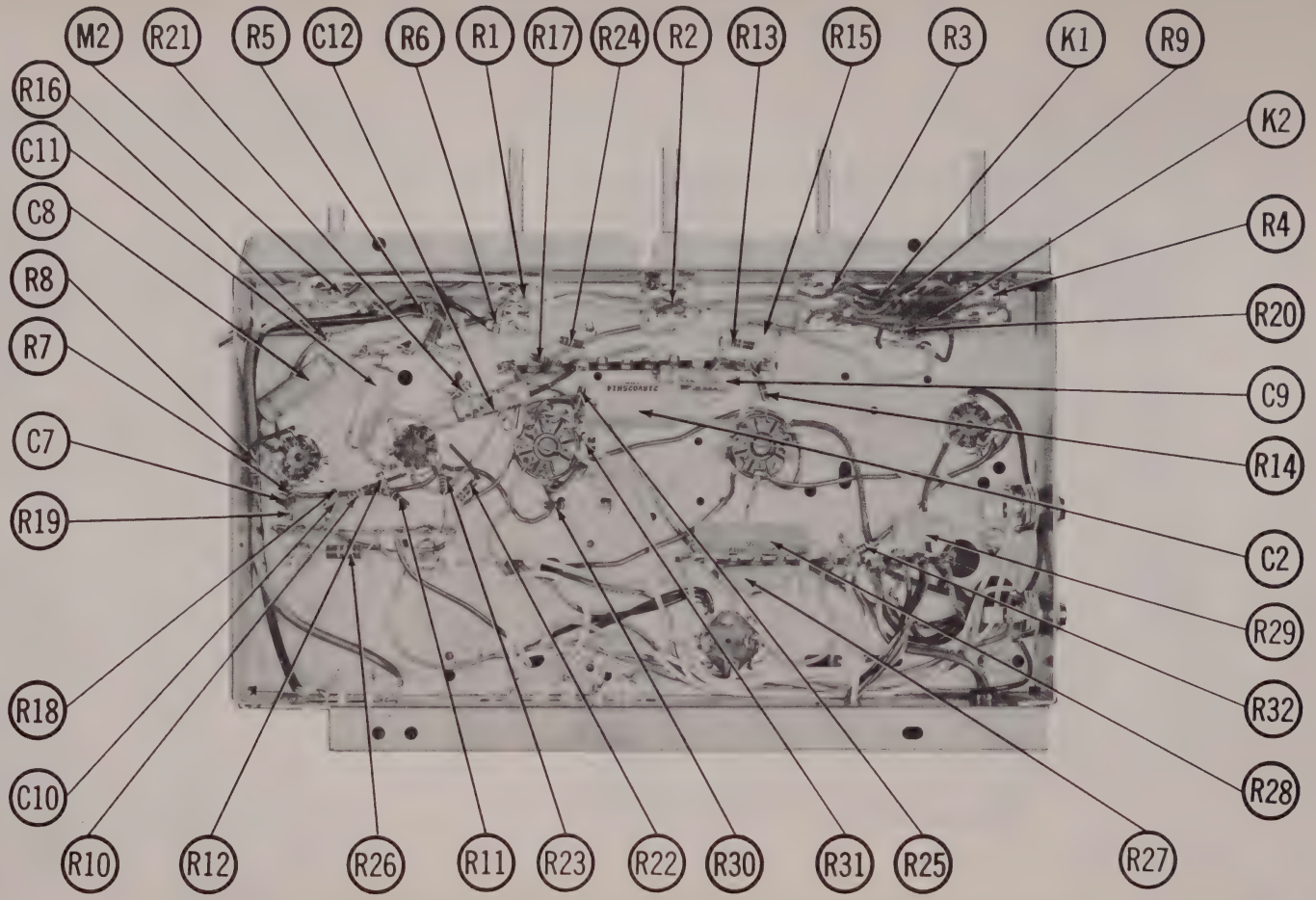


CHASSIS BOTTOM VIEW

PARTS LIST AND DESCRIPTIONS

WIRING DATA

General-use Unshielded Hook-up Wire	Use BELDEN No. 8530 (Solid) Available in Ten Colors 8524 (Stranded) Available in Ten Colors
Power Cord	Use BELDEN No. 1765-B (6 Ft. Length) 1725-K (7½ Ft. Length)
Low-Loss Shielded Lead (Interconnecting)	Use BELDEN No. 8401
Phono Pick-up Arm Cable	Use BELDEN No. 8430 (Two Conductor - Twisted)

TUBES

ITEM No.	USE	TYPE	ITEM No.	USE	TYPE
V1	Left Channel AF Amp. - Right Channel AF Amp.	7025	V3	Left Channel Output	7591
V2	Left Channel AF Amp. - Right Channel AF Amp.	7025	V4	Right Channel Output	7591
			V5	Rectifier	EZ81/6CA4

ELECTROLYTIC CAPACITORS

ITEM No.	RATING CAP.	RATING VOLT.	Westinghouse PART No.	AEROVOX PART No.	CORNELL-DUBILIER PART No.	MALLORY PART No.	PYRAMID PART No.	SPRAGUE PART No.	NOTES
C1A	▲40	400	218V025H47	AFH4-93	D0176	FP428.4	TMQ-4391	TVL-4720	
B	■40	400							
C	▲30	350							
D	30	300							
C2	100	25	218V025H14	PRS1270	BBR100-25	TC2501	TD-100-25	TVA-1207	
C3	70	40NP	218V025H41		BR8015	TCN492 †		TVANS-1310.1*	
C4	4	50NP	218V025H19	PRS7405	BBR4-150	TCN504		TVANS-1302.5*	
C5	70	40NP	218V025H50		BR8015	TCN492 †		TVANS-1310.1*	
C6	4	50NP	218V025H19	PRS7405	BBR4-150	TCN504		TVANS-1302.5*	

* Not normally in distributor's stock. Available thru distributor on order to manufacturer.
† Use 2 units. Connect negative terminals together. Connect positive terminals into circuit the same as the original non-polarized unit.

FIXED CAPACITORS

Capacity values given in the rating column are in mfd. for Paper Capacitors, and in mmfd. for Mica and Ceramic Capacitors.

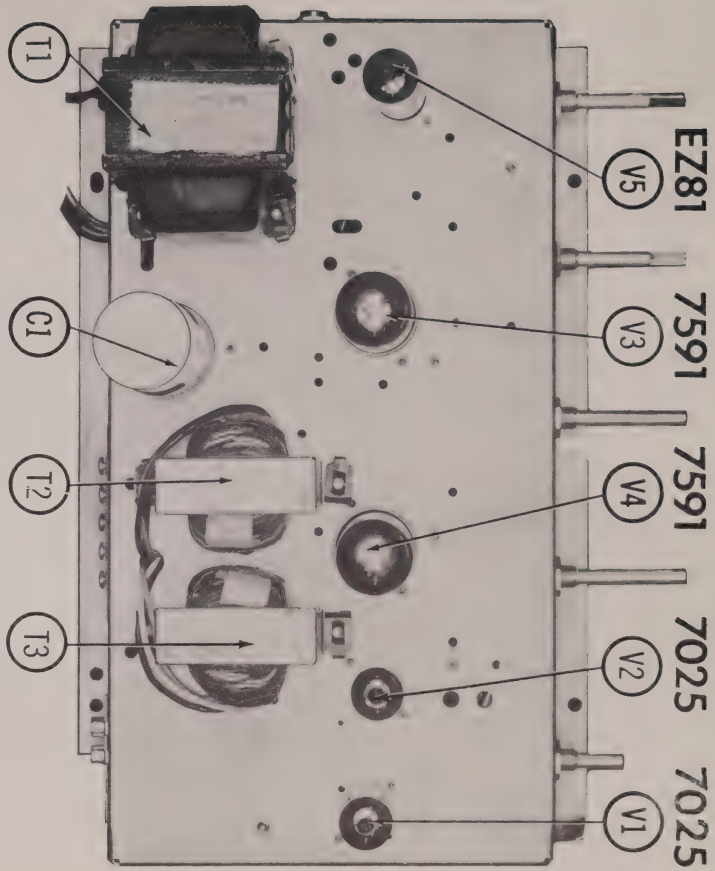
ITEM No.	RATING	REMARKS	AEROVOX PART No.	CENTRALAB PART No.	CORNELL-DUBILIER PART No.	ELMENCO PART No.	MALLORY PART No.	SPRAGUE PART No.
C7	330		DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C8	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C9	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22
C10	330		DI-330	DD-331	L10T33	CCD-331	B-333	10TS-T33
C11	.047 400V		P488N-047	DD-503	CUB4S47	4DP-3-473	GEM-4147	4TM-S47
C12	.022 400V		P488N-022	DD-203	CUB4S22	4DP-2-223	GEM-4122	4TM-S22

CONTROLS

ITEM No.	RATING RESISTANCE	RATING WATTS	Westinghouse PART No.	CENTRALAB PART No.	CLAROSTAT PART No.	CTS-IRC PART No.	MALLORY PART No.	INSTALLATION NOTES
R1A	1meg		270V062H03	B-70	AD47-1meg-Z		FA16A	Loudness, Left Channel
B	1meg			SR-70	Not Req.		RU16A	Loudness, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R2A	1meg		270V062H04	B-744			■ UE4103	Balance, Left Channel
B	1meg			SR-68				Balance, Right Channel
R3A	1meg		270V062H05	B-69	AD47-1meg-S		FA16L	Bass, Left Channel
B	1meg			SR-69	Not Req.		RU16L	Bass, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	
R4A	1meg		270V062H05	B-69	AD47-1meg-S		FA16L	Treble, Left Channel
B	1meg			SR-69	Not Req.		RU16L	Treble, Right Channel
C	Shaft			Not Req.	FS-3		CS3500	

■ Factory Assembled.

CHASSIS—TOP VIEW



PARTS LIST AND DESCRIPTIONS (Continued)

RESISTORS

All wattages 1/2 watt, or less, unless otherwise listed.

ITEM No.	RATING	REPLACEMENT DATA		
		IRC PART No.	WORKMAN TV PART No.	REMARKS
R5	330K			
R6	270K			
R7	270K			
R8	1200Ω			
R9	100K			
R10	470K			
R11	3900Ω			
R12	22K			
R13	680K			
R14	1000Ω			
R15	68Ω 2W			
R16	330K			
R17	270K			
R18	270K			
R19	1200Ω			
R20	100K			
R21	470K			
R22	3900Ω			
R23	22K			
R24	680K			
R25	1000Ω			
R26	18K 1W			
R27	3300Ω 3W	PW5-3300	5W-SQ-3300	
R28	230Ω 8W	PW10-230	8W-SQ-230	
R29	47Ω 3W	PW5-47	3W-SQ-47	Fuse Type
R30	47Ω			
R31	47Ω			
R32	150K			

COMPONENT COMBINATIONS

ITEM No.	USE	DESCRIPTION	Westinghouse PART No.	REPLACEMENT DATA
K1	Tone Comp.	100mmf, (2) 2200mmf, 22000mmf, 10K, 150K	219V021H01	
K2	Tone Comp.	100mmf, (2) 2200mmf, 22000mmf, 10K, 150K	219V021H01	

COILS (RF-IF)

ITEM No.	USE	REPLACEMENT DATA					NOTES
		Westinghouse PART No.	Merit PART No.	Miller PART No.	Stancor PART No.	Workman TV PART No.	
L1	Tone Choke (1.3uh)	230V095H01					

TRANSFORMER (POWER)

ITEM No.	RATING			REPLACEMENT DATA					NOTES
	PRI.	SEC. 1	SEC. 2	Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T1	117V @ .78A	580VCT @ .115A DC	6.3V @ 2.5A	410H024H01		PC8405 ① ②	24R20U ① ②		① Tape 5V & CT on 6.3V Windings. ② Drill New Mounting Hole(s).

TRANSFORMER (AUDIO OUTPUT)

ITEM No.	IMPEDANCE		REPLACEMENT DATA					NOTES
	PRI.	SEC.	Westinghouse PART No.	Merit PART No.	Stancor PART No.	Thordarson PART No.	Triad PART No.	
T2	2600Ω	3-4Ω CT	430V101H01					① Alternate Part #430V101H01
T3	2600Ω	3-4Ω CT	430V101H02 ①					

SPEAKER

ITEM No.	TYPE			REPLACEMENT DATA		NOTES
	SIZE	FIELD	V. C. IMP.	Westinghouse PART No.	QUAM PART No.	
SP1	6"	PM	6-8Ω	570V068H04	6A15Z6.4	* Replaces SP1 or SP4 in some versions.
SP2	4"	PM	6-8Ω	570V071H01	4A1Z6.4	
SP3	12"	PM	3-4Ω	570V090H01	12A6A	
SP4	6"	PM	6-8Ω	570V068H04	6A15Z6.4	
SP5	4"	PM	6-8Ω	570V071H01	4A1Z6.4	
	6"	PM	6-8Ω	570V068H03 *	6A31Z6.4	

PHONO CARTRIDGE & NEEDLES

*NEEDLE LISTINGS SHOWN ARE FOR RESPECTIVE REPLACEMENT CARTRIDGES ONLY.

ITEM No.	REPLACEMENT DATA								NOTES
	Westinghouse PART No.		ASTATIC PART No.		ELECTRO-VOICE PART No.		SONOTONE PART No.		
	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	CARTRIDGE	NEEDLE*	
M1	671V001H02	Not Req.	13TB	Not Req.	13	Not Req.	8TA4-S	N-8TA-S *	

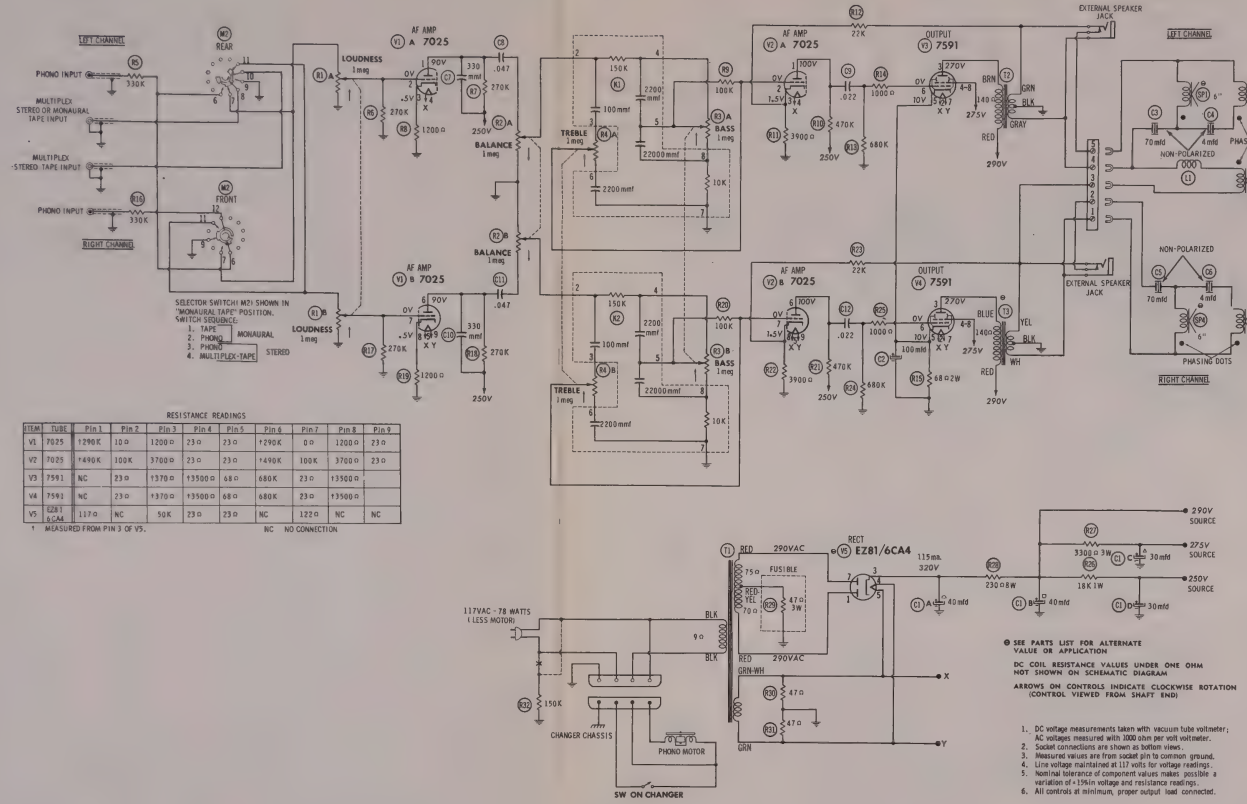
MISCELLANEOUS

ITEM No.	PART NAME	Westinghouse PART No.	NOTES
M2	Switch	756V054H01	Function Selector (Rotary Wafer Type)

CABINETS & CABINET PARTS

(When Ordering Cabinets & Cabinet Parts, Specify Model, Chassis & Color)

NAME	PART NO.	DESCRIPTION
Knob	559V071H01	Rear, Loudness, Bass, Treble
Knob	559V114H02	Front, Loudness, Bass, Treble
Knob	559V070H01	Balance
Knob	559V137H04	Function Selector
Cabinet	516V233H01	Walnut, Model H-F1120
Cabinet	516V234H01	Mahogany, Model H-F1121
Cabinet	516V233H02	Limed Oak, Model H-F1122
Cabinet	516V235H01	Maple, Model H-F1123



RESISTANCE READINGS

ITEM	TUBE	Pin 1	Pin 2	Pin 3	Pin 4	Pin 5	Pin 6	Pin 7	Pin 8	Pin 9
V1	7025	†290K	10Ω	1200Ω	23Ω	23Ω	†290K	0Ω	1200Ω	23Ω
V2	7025	†490K	100K	3700Ω	23Ω	23Ω	†490K	100K	3700Ω	23Ω
V3	7591	NC	23Ω	†370Ω	†3500Ω	68Ω	680K	23Ω	†3500Ω	
V4	7591	NC	23Ω	†370Ω	†3500Ω	68Ω	680K	23Ω	†3500Ω	
V5	EZ81 6CA4	117Ω	NC	50K	23Ω	23Ω	NC	122Ω	NC	NC

† MEASURED FROM PIN 3 OF V5. NC NO CONNECTION

● SEE PARTS LIST FOR ALTERNATE VALUE OR APPLICATION

DC COIL RESISTANCE VALUES UNDER ONE OHM NOT SHOWN ON SCHEMATIC DIAGRAM

ARROWS ON CONTROLS INDICATE CLOCKWISE ROTATION (CONTROL VIEWED FROM SHAFT END)

1. DC voltage measurements taken with vacuum tube voltmeter; AC voltages measured with 1000 ohm per volt voltmeter.
2. Socket connections are shown as bottom views.
3. Measured values are from socket pin to common ground.
4. Line voltage maintained at 117 volts for voltage readings.
5. Nominal tolerance of component values makes possible a variation of ±15% in voltage and resistance readings.
6. All controls at minimum, proper output load connected.

A PHOTOFACT STANDARD NOTATION SCHEMATIC

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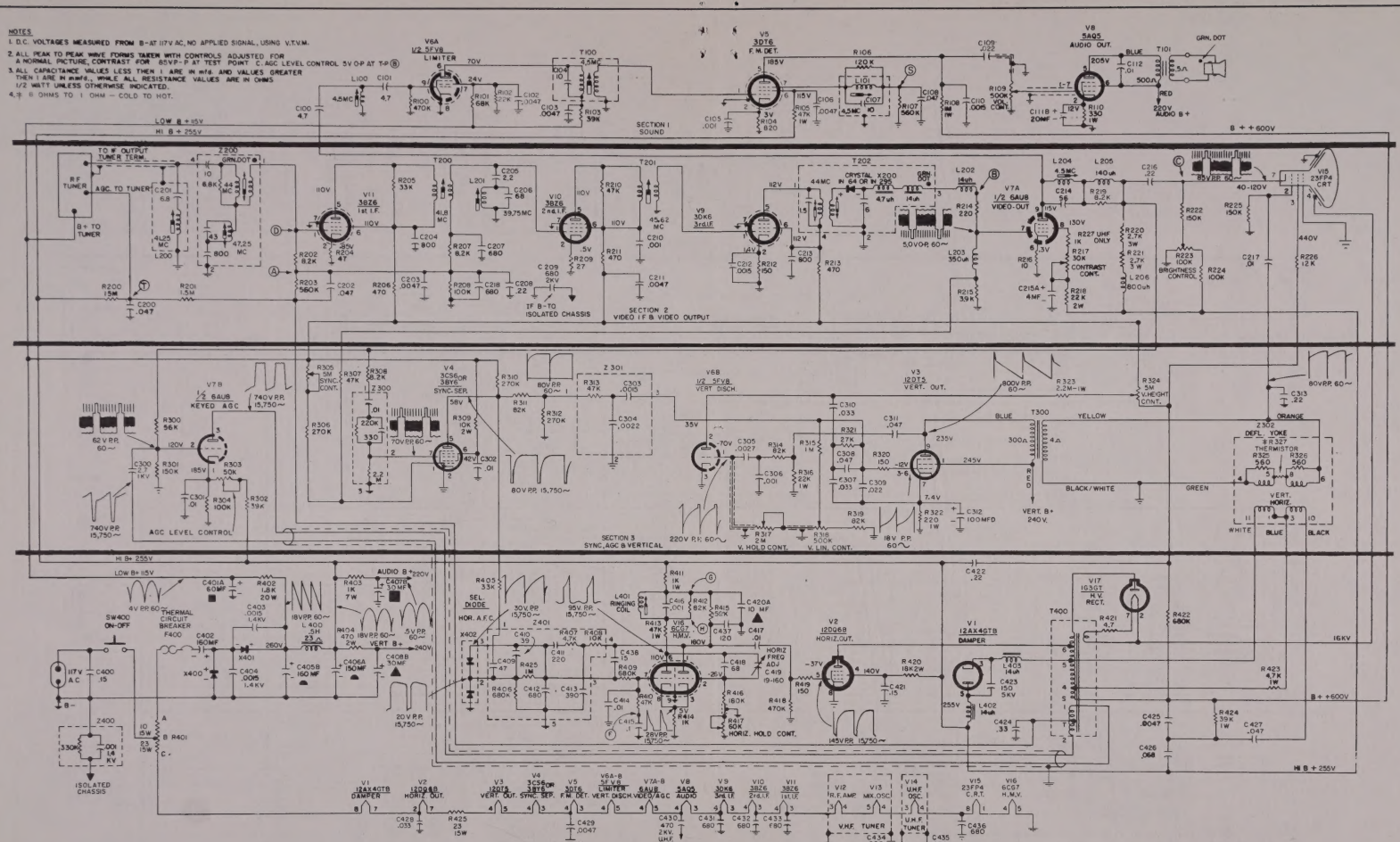
WESTINGHOUSE MODELS H-F1120, H-F1121, H-F1122, H-F1123 (Ch. V-2512-2)

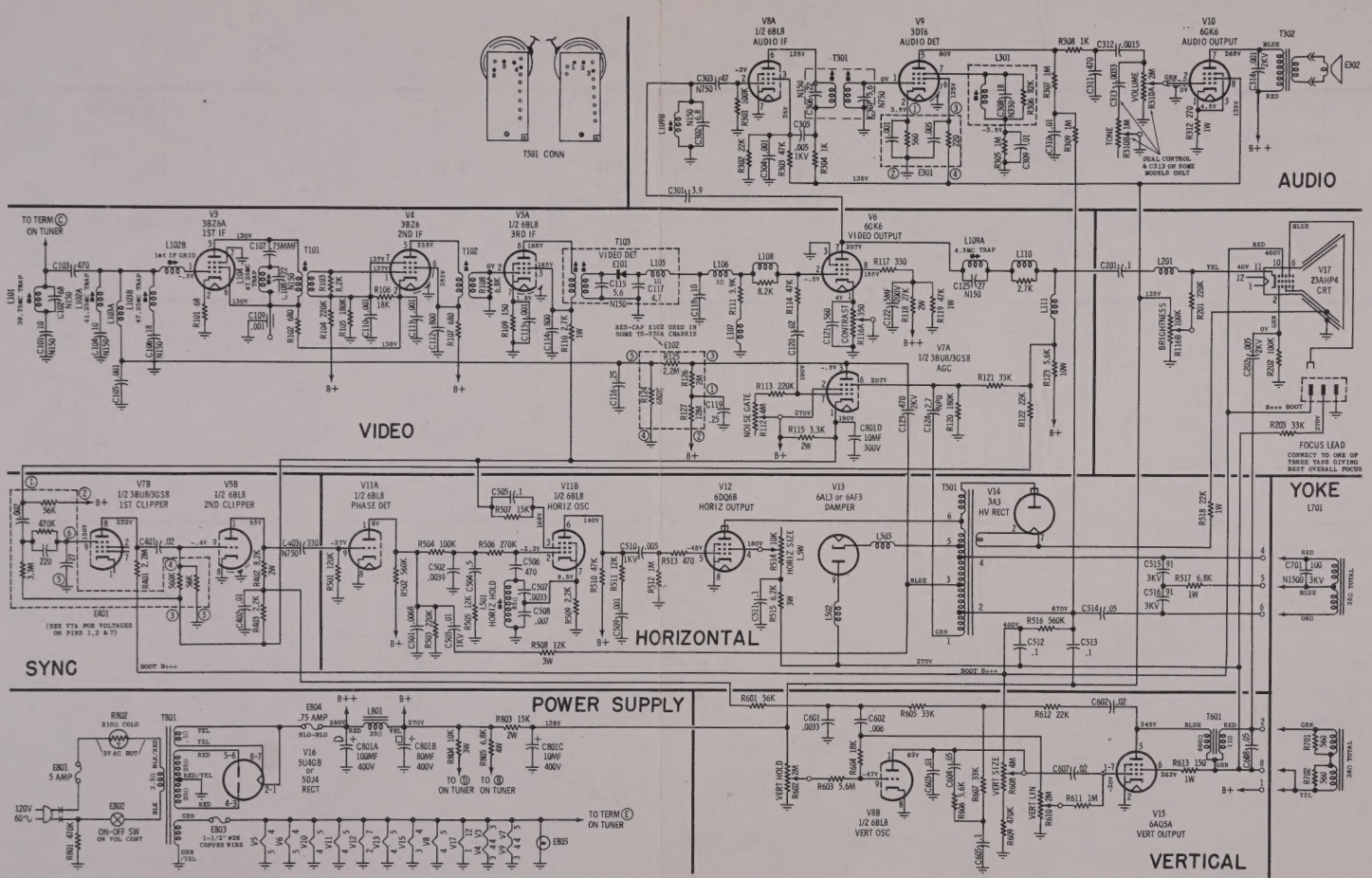

NOTES
1. D.C. VOLTAGES MEASURED FROM B-AT 117V AC, NO APPLIED SIGNAL, USING V.T.V.M.
2. ALL PEAK TO PEAK WAVE FORMS TAKEN WITH CONTROLS ADJUSTED FOR A NORMAL PICTURE, CONTRAST FOR 85VP-P AT TEST POINT C. AGC LEVEL CONTROL 5V O-P AT T-P B
3. ALL CAPACITANCE VALUES LESS THEN 1 ARE IN mfd. AND VALUES GREATER THEN 1 ARE IN mmfd., WHILE ALL RESISTANCE VALUES ARE IN OHMS 1/2 WATT UNLESS OTHERWISE INDICATED.
4. ± 8 OHMS TO 1 OHM — COLD TO HOT.
LOW B+115V
HI B+255V
B++600V
SECTION 1 SOUND
SECTION 2 VIDEO I.F.& VIDEO OUTPUT
SECTION 3 SYNC, AGC & VERTICAL
SECTION 4 HORIZ & POWER
AGC LEVEL CONTROL
ISOLATED CHASSIS
V1 12AX4GTB DAMPER
V2 12QG6B HORIZ. OUT.
V3 12DT5 VERT. OUT.
V4 3C66OR 3BY6 SYNC. SEP.
V5 3D16 F.M. DET.
V6A-B 5FY8 LIMITER
V7A-B 6AU8 VIDEO/AGC
V8 5AQ5 AUDIO
V9 3DX6 3V6LF
V10 3B26 2nd I.F.
V11 3B26 1st I.F.
V12 R.F. AMP.
V13 MIX. OSC.
V14 U.H.F. OSC.
V15 23FP4 C.R.T.
V16 6CG7 H.V.M.V.
V17 1B3GT H.V. RECT.
VHF TUNER
UHF TUNER

WESTINGHOUSE MODELS H-K3810, U, H-K3811, U, H-K3850, U, H-K3851, U, H-K3852, U, H-T3560, U, H-T3561, U, H-T3562, U, H-T3563, U (CH. V-2414-1, -2).

Schematic Diagram Courtesy of Westinghouse Electric Corporation

← WESTINGHOUSE

MOTOROLA



MOTOROLA MODELS Y23T4BR, BRA, Y23T5B, BW, CW, M, W, 23T4BR, BRA, 23T5B, BW, CW, M, W (CH. STS-570, Y, TS-570, Y)

Schematic Diagram Courtesy of Motorola Inc.

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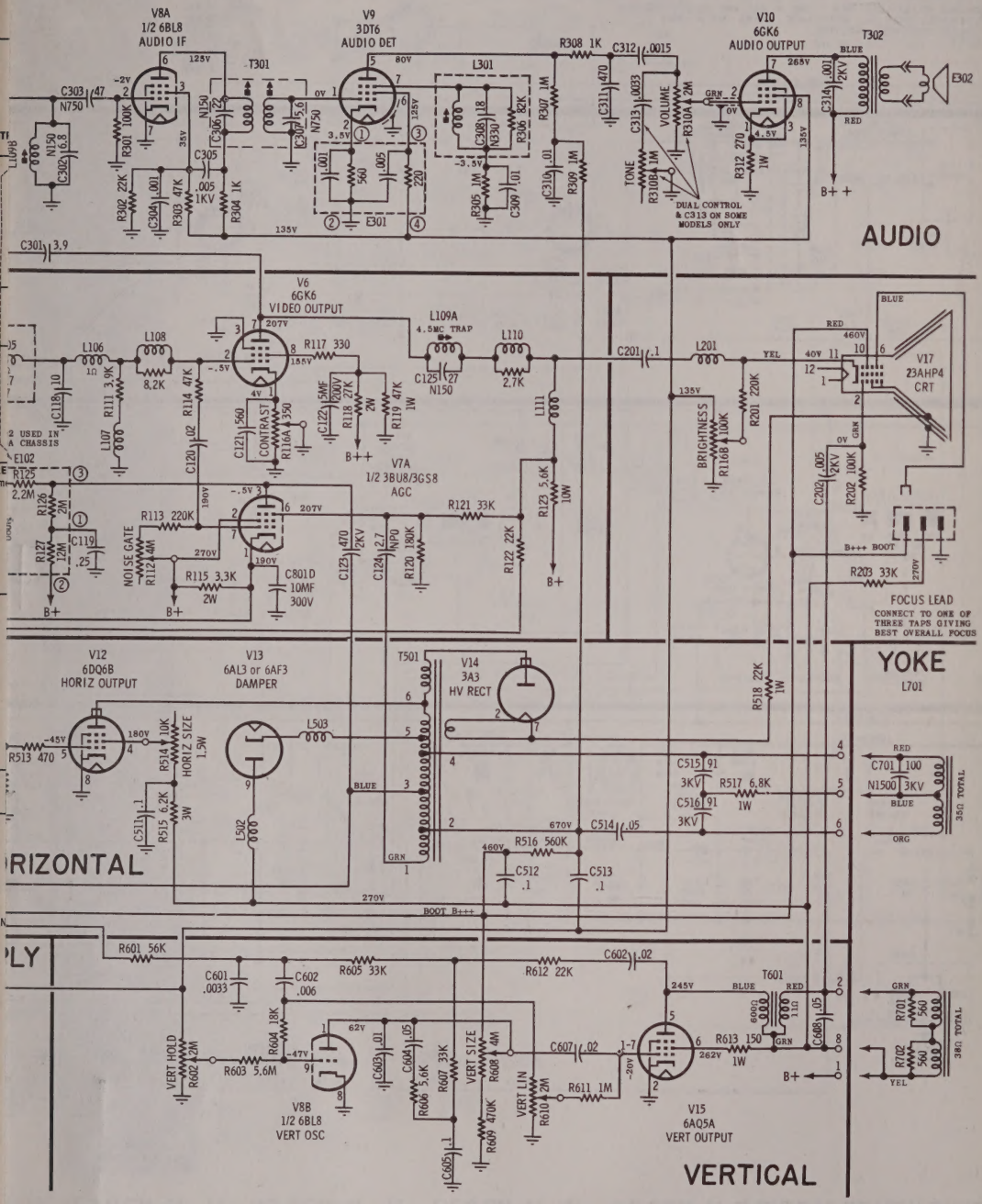

Schematic Diagram Courtesy of Motorola Inc.